

Consumers' Research BULLETIN



1956 REFRIGERATORS

Radio receivers from Europe

German station wagon—the Borgward

Fire extinguishers

Training pants

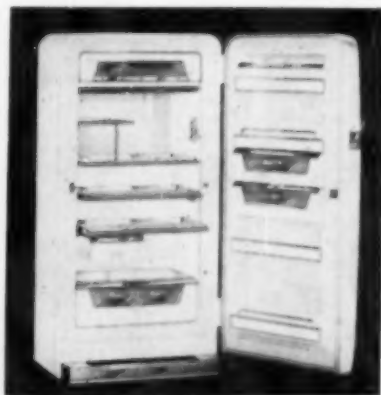
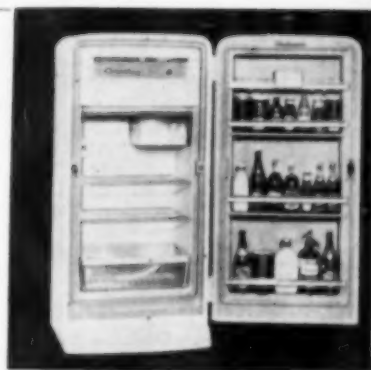
Trash burners

Treating rugs with soil retardants

A tax is a tax is a tax

Ratings of phonograph records

COMPLETE CONTENTS ON INSIDE FRONT COVER



CONSUMERS' RESEARCH BULLETIN

WASHINGTON, NEW JERSEY

THE MAGAZINE THAT GUIDES CONSUMER BUYING

AUGUST 1956. VOL. 38. NO. 2

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Off the editor's chest

HOW TO RAISE taxes to pay for new schools, hospitals, and other public services is a dilemma that is giving headaches to many public officials these days. The problem is particularly acute where any sizable building or a number of buildings must be constructed at today's skyrocketing prices for materials and building trade labor. Better roads and expansion of water and sewage disposal are also required in many communities as city people move to the suburbs with their children. All these improvements must be paid for by the imposition of new or higher taxes, and increasingly states and municipalities are resorting to sales taxes on many or most purchases made by consumers.

Since it is estimated that the federal government takes 74 percent of total taxes collected, leaving only 26 percent for state and local governments, it is obvious that in seeking more funds the states and municipal authorities will often be putting additional imposts on items already taxed. Consumers are generally conscious that they pay federal taxes on such items as gasoline, cigarettes, liquor, theater admissions, luggage, handbags, jewelry, and cosmetics. They will therefore tend to check on further increases in price due to state and local sales taxes. More than half the states, for example, tax gasoline and some collect as much as 7 cents a gallon. Cigarettes are taxed by some 41 states, as high as 8 cents per pack in addition to the federal tax. Not so well known, however, is the fact that there are federal excise taxes on most electrical, gas, and oil home appliances, and on automobiles and tires. These taxes are levied "at the manufacturer's level." Although the approximate amount of the tax is included in the

(Continued on page 24)

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Listings usually are arranged in alphabetical order by brand name (not in order of merit) under each quality or performance rating. A numeral 1, 2, or 3, at the end of a listing indicates relative price, 1 being low; 3, high. Where the 1, 2, 3 price ratings are given, brands in the 1, or least expensive group, are listed alphabetically, followed by brands in price group 2, also in alphabetical order, etc. A quality judgment is wholly independent of price.

The Consumers' Observation Post

PLASTIC AWNINGS and those made of Fiberglas are sometimes advertised as "colorfast," "no maintenance," and "permanent." It is not necessarily so, according to the Philadelphia Better Business Bureau. Plastic awnings, like other building materials exposed to the elements, will lose or change color in time. The Bureau also points out that studies indicate a tendency for the resin surfaces of such awnings to harden slowly and crack, exposing the Fiberglas interior, which will then feather. Such exposed spots may be retouched with lacquer, suggests the Bureau.

* * *

DO YOU BUY LAMPS SOLELY FOR STYLE or do you also look for sound construction and safety from fire hazard? The well-made lamp may cost a bit more, but it will probably carry the UL seal of approval, indicating that it has met the minimum safety requirements of the Underwriters' Laboratories. Some municipalities, particularly on the West Coast, require that all lamps sold in their jurisdictions carry the UL label. According to an article by Jo Ann Cornell in Retailing Daily, most retailers across the country favor some system of minimum safety standards for pin-up, floor, and table lamps. As one buyer pointed out, the better construction of UL approved lamps would eliminate the problem of returns due to poor wiring. Consumers can speed the adoption of such a standard by looking for lamps with the UL label when they make their next purchase.

* * *

THE MAN-MADE-FUR COATS of Orlon-Dynel fur-pile fabrics are expected to be popular again this fall. The leading colors last year were beige and gray, but the National Institute of Drycleaners reports that they showed soil so easily that this year's trend is toward the darker toast, brown, charcoal, dark blue, and black. The coats can be cleaned acceptably with proper handling, but the N.I.D. warns that a certain amount of tufting from wear may be expected, and the fabric has a tendency to mat around the neckline, cuffs, and edges of pockets.

* * *

AIR CONDITIONING UNITS should not be advertised as "just plug in" units, at least not in New York City. That's the recommendation of the Better Business Bureau of New York - a recommendation that is made necessary by the terms of the particular code that governs installations in New York City. In a special bulletin, the B.B.B. advised that the 7-1/2 amp. air conditioner is subject to the same installation requirements as other units, namely that each air conditioner be on a separate branch or appliance circuit; number 12 wire or larger must be used for air conditioners over 1/2-ton capacity; and a receptacle allowing for proper grounding of the conditioner must be provided. The Bureau frowns on claims such as "no wiring problem," "no special wiring needed," and "operates on regular house current."

* * *

ADVERTISING CLAIMS for foods, drugs, cosmetics, and medical devices are discussed in a little pamphlet put out by the Department of National Health and Welfare of Canada. The current practices of advertisers in using dangling comparatives, such as "better" or "larger," often without indicating the basis of comparison, and analytical charts that rarely convey the proper meaning to the public are two examples picked at random from the list of those that are examined critically. Teachers and students of advertising will find the booklet useful in evaluating current advertising techniques and claims. It is called Guide for Manufacturers and Advertisers, available from Chief Administrative Officer, Food and Drug Directorate, Department of National Health and Welfare, Ottawa, Ontario, Canada.

HOW TO PREVENT TOOTH DECAY is a growing problem. Only an over-all nutritional program and proper orientation of the habits of modern man can be expected to achieve a solution, according to one Englishman. Something of the same viewpoint has been advanced by the U. S. dental-research team, Dr. Hans H. Neumann and Dr. N. A. Di Salvo, in an interview in U. S. News & World Report. In a number of trips to Central and South America where they measured the biting strength of native people, they found that people in impoverished areas, with poor nutrition, water lacking in fluorine, and no toothbrushes, had excellent teeth, free from cavities. Wherever the investigators found good teeth, they found chewing power developed from use of certain tough foods such as toasted beans and toasted corn. It was their observation that softness of foods in the present diet of most people may be an important cause of tooth decay, and they suggested that chewing the kind of hard, tough, chewy Italian or French type bread that Europeans use might help children develop stronger teeth. They recommended that, in any event, children be taken off strained baby foods as soon as possible.

* * *

MEN'S SUITS WILL COST MORE this fall. Due to a general wage increase, almost all manufacturers have raised prices to an extent that will call for increases on new suits of 75 cents to \$2.50. The trade reports heavy buying by retailers, indicating that consumers are not expected to balk at the higher prices.

* * *

THE COMBINATION WASHER-DRYER has a promising future, but so long as the consumer can purchase a separate washer and a dryer unit for less than the price of the combination unit, sales will lag somewhat. Two other factors that manufacturers of the combination units must deal with are quietness of operation and flexibility, according to R. M. Spang, general manager of the home laundry division, Hotpoint Company. Mr. Spang points out that there are two features of flexibility to be taken into consideration: a variety of cycles and performance so that by merely pushing a button a housewife can get a cold rinse, a hot rinse, a delicate fabric cycle, etc.; and greater ease of installation. He reports that automatic washers usually have a life of about seven years, but that with proper care in use a washer should last about 10 years. The most promising market for the combination unit in Mr. Spang's opinion is the young married couple and the older couple without children.

* * *

THE USE OF ANTIBIOTICS in the care and feeding of farm animals continues to increase. The Public Health Reports show an increase of 8 percent in the number of samples of milk from various parts of the country that were found to contain penicillin. While the actual amounts are small, the widespread use of penicillin in so many different fields other than the actual administration of "shots" by a physician for specific ailments presents a problem for the many persons who are allergic to this antibiotic.

* * *

FROZEN FOODS are now a major staple in the U. S. diet. As the volume has increased, prices have gone down, reports The Wall Street Journal, which notes that the 1932 average retail price of 25 cents for a 10-ounce package of frozen peas has come down to 19-1/2 cents; the 6-ounce can of frozen concentrated orange juice, which sold for 27.3 cents in late 1949, averaged 18.9 cents at the end of 1955. The increasing number of frozen foods, particularly those which are the heat-and-serve type, have been a major factor in reducing the time the housewife spends in the kitchen. It was estimated that in 1920 a woman had to spend 5.5 hours daily just to prepare food for a family of four. Today only about 1.6 hours are needed on the average. Prices for food that is ready-prepared are, of course, somewhat higher than for food prepared at home. A dark speck on the horizon is the complaint of President Dave Beck of the International Brotherhood of Teamsters that the frozen foods industry can ship several months' supply of food in one big shipment, using only a fraction of the truck drivers that would be needed to transport the equivalent amount of unfrozen foods. That sounds like a forerunner of higher transportation costs.

(The continuation of this section is on page 33)



Ward's Deluxe Top-Cold



Admiral DA-1110

1956 Refrigerators

MANUFACTURERS feel that in order to sell more refrigerators they must make their new models so attractive and new in appearance that the homemaker will be dissatisfied with her present refrigerator—even though it may be fully satisfactory in all important respects. As a part of this drive for newness and change, manufacturers are now offering refrigerators in a choice of colors to match the color scheme of the kitchen. Automatic or semiautomatic defrosting is available at an extra charge—around \$50. Specific places are provided for certain foods and liquids (called “food filing” by one maker). One make offers magnetic door catches. For those to whom general storage space is more important than freezer space, some makers offer models without a freezer compartment; in such models, the only freezer space is a small one, meant primarily for ice cubes.

Models of refrigerators are available with the freezer space at the top; others have the freezer at the bottom. Many of the new features have merit, but housewives vary widely in their purchases of food and their ideas of where they want to store it; while one design may seem to be ideal for one family, it could be very unsuitable for another. There are certain features, however, that all housewives will want.

1. Shelf bars or rods should be closely spaced and the shelf surfaces should be flat or preferably



Frigidaire Super S-121-06

made of flat-surfaced rods so that containers do not tend to tip over so easily. Some of the shelves should be adjustable in position, so that sufficient space can be obtained between them as needed to store a particularly bulky item such as a turkey or ham. The shelves in the door should be deep enough and so located that one-quart bottles and milk containers can be handled. Door shelves should have guard rods to prevent bottles from tipping and falling out of place.

2. If automatic defrosting is desired, it should be of a type that does not adversely affect frozen foods during the defrosting, or leave packages frozen solidly to the shelf after the freezing cycle has been resumed.

3. Temperature in the freezer space should be low enough (say 10 degrees or below) to keep frozen food without substantial loss of quality for at least two weeks, and without need to set the control knob at so low a temperature that the

general food compartment falls below 39 degrees. Normally the food compartment of refrigerators is maintained at about 43 degrees, but the National Electrical Manufacturers Association, presumably under pressure from their members who were unable to obtain satisfactory freezer-space temperatures with a 43-degree food compartment temperature, changed their test methods so that tests would be made with a food-storage space of 39 degrees in a room at a temperature of 90 degrees. While this dropping of the food chamber temperature does give a lower freezer air temperature, it makes the refrigerator only appear to be better than it otherwise would be. Even with the revised test methods, the majority of the 1956 refrigerators have freezer air temperatures that are a good deal too high. On those refrigerators, such as the *Kelvinator K44F-11-R* and *K46F-11S-R*, which employ adjustable baffles beneath the freezing compartment and at the rear, freezer temperatures lower than those reported may be obtained by placing the baffles in the "closed" or "winter" position. In this position, however, operating cost will be considerably higher and percent running time considerably longer for the same food-chamber temperature. CR's calculated figures for monthly operating cost are higher (about 20 percent), on the average, than formerly, since they are now based on operation with the food-storage compartment at 39 degrees (not 43 degrees as in previous years).

4. It is desirable that door handles should be of a design that they can be operated by a person carrying a food container or utensil in each hand.



Illustration of the Frigidaire Super showing how the plastic "meat tender" could be damaged if the egg receptacle should fall to its open position, owing to its not being properly latched. Failure of the latch to operate was a common occurrence on the box tested.

Features which depend upon the requirements of the individual home are:

1. Location of freezer. The customary location of the freezer is at the top of the box; however, some manufacturers hold that the bottom is the right place for the freezer compartment, as the freezer space is not used as frequently as the general storage space, and the most-used space should be at the most accessible position. Which position is preferable is debatable, but bear in mind that kneeling or bending down for some time while looking for a particular package of food or arranging the contents can be a tiresome and exasperating chore. If you use frozen foods only infrequently, the bottom position for the freezer space has its obvious advantages.

2. Special compartments on the door for eggs are handy, but some use space inefficiently; many housewives may prefer to store eggs in the food storage space in the original cartons in which they are purchased. The special receptacles do have the advantage of showing at a glance how many eggs are left.

3. Special compartment for butter; some raise the temperature slightly by an electric heating element.

4. Door-holding devices to hold the door open in one or more open positions are a convenient feature.

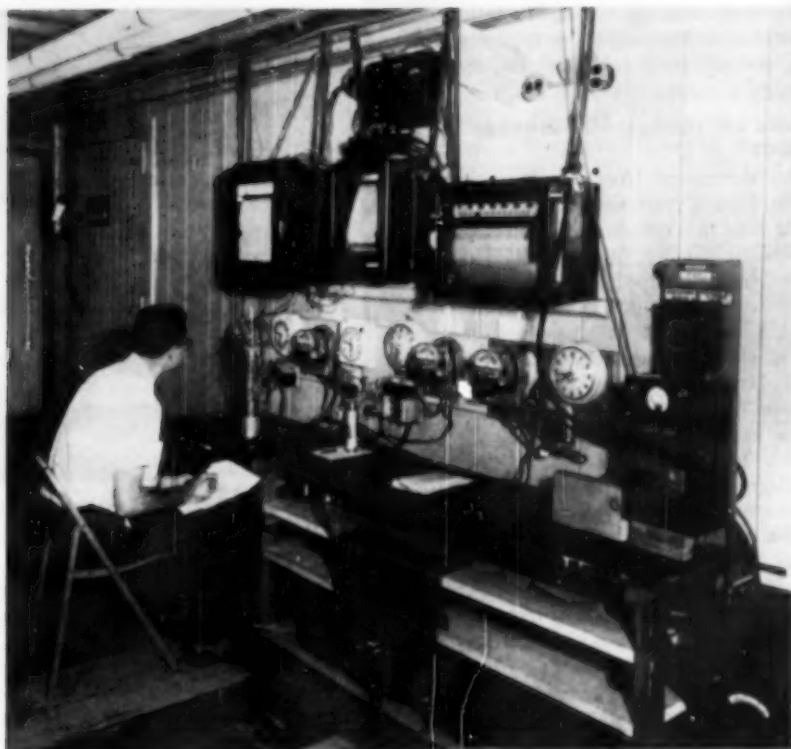
5. For many, built-in cold-drink dispensers would be in the gadget class, but they may have their appeal to some users.

6. A meat drawer or chiller tray, for storing meat without freezing it, is considered very important by some housewives. It is of great value where fresh meat may have to be held for three or four days before use (unless the whole food chamber can be kept at, say, 35-36 degrees, or thereabouts—which involves, of course, higher cost for electricity per month than the higher temperatures formerly common—around 43 degrees). It should be noted that a number of the new refrigerators do not have a tray in which the temperature is lower than that in the rest of the food-storage compartment and therefore meat keeping qualities are much less favorable than with the older-style boxes having the usual meat trays.

Automatic defrosting

There are several means of automatic or semi-automatic defrosting:

1. An electric heating coil built into the wall of the cold-producing element of the refrigerator is turned on automatically once in each 24 hours at a pre-set time, or is turned on manually by



The recording instruments used for temperatures, and other measuring instruments outside the constant temperature room used in the testing of refrigerators by Consumers' Research.

the pressing of a button when defrosting is desired.

2. The hot gas method, in which heat given off by the refrigerant during the condensing cycle is passed back into the evaporator coils once every 24 hours (or upon the pressing of a button).

3. Moisture in the box is collected as frost on a refrigeration plate located in the storage space. When the temperature of this plate reaches a pre-set value (above the melting point of ice), the compressor operates for a time; defrosting of this plate occurs during the "off" part of each cycle. (The *Crosley RH-11* uses a moisture-collecting plate for the food storage section and an electric heat-coil for defrosting the ice cube section.)

With all three methods, the water produced by defrosting is collected in a receptacle inside the cabinet. This must be emptied periodically, in some cases; in others, the flow of defrost water is piped to a shallow tray at the bottom

of the machine compartment where it is evaporated by the heat in that space.

The electric heating-coil method of defrosting does a satisfactory job, and while the temperature of the air in the freezer becomes quite high in the freezer space during the defrosting cycle with this method, the rise is for a short period only, and does not appear to affect the quality of the stored frozen food. Defrosting with an electric heating coil can be fully automatic, controlled by a clock which is set to defrost at a predetermined time; or it may be semiautomatic, that is operated by a button pushed by the homemaker whenever she wishes to defrost. The push-button method, which is under the control of the user and can be started whenever desired or convenient, is considered preferable as the housewife can remove the contents of the freezer for the short time required for defrosting and thus eliminate any possibility of the defrost water freezing around the contents when normal operation resumes. This may occur to a serious

extent if fully-automatic defrosting is employed.

The defrosting method using a refrigeration plate in the food chamber (as employed by the *Norge*) operated satisfactorily.

Refrigerators vs. refrigerator-freezer combinations

What is the difference from the consumer's standpoint between a refrigerator with a freezer compartment and a combination refrigerator-freezer? Fundamentally, a combination refrigerator-freezer is an appliance in which the freezer space can be maintained at zero degrees or lower (as it should be, for best keeping of frozen food) while the general storage space remains well above freezing (usually in the range 39 to 43 degrees). In refrigerators, the minimum temperatures in the freezer compartments are usually much higher than zero (an average around 18 degrees), but to be satisfactory for storage of frozen foods for two weeks or so, they should be able to maintain temperatures as low as 10 degrees.

Until recently, the freezer and refrigerator sections in combination refrigerator-freezers were cooled by separate coils carrying refrigerant, separately controlled. Now the majority of refrigerator-freezers have a single control for both sections, and the only visible difference between the two types is that, in the combination appliance, the freezing compartment is completely



The door handle of the Norge refrigerator was especially well designed to permit its being opened easily by the homemaker when both hands were full.

sealed off from the refrigerator space. Results of tests on a number of refrigerator-freezers will appear in an early BULLETIN.

Safety aspects of doors

Many children have died by being locked in refrigerators, through their own act or that of other children. As a partial safeguard against this, Admiral equip some of their models with an inside luminous handle so that a trapped child could possibly open the door from the inside. The *General Electric* "magnetic door" is claimed to permit the boxes to be opened from the inside by a simple push against the door. Much, however, would depend upon whether the child would be able to exert the considerable pressure (about 15 pounds) required. Although the *Admiral* "safety latch" and the *General Electric* "magnetic door" are steps in the right direction, neither appears to be a satisfactory solution to the problem. Perhaps the nearest to the ideal solution would be a means which would hold the door closed only when electricity was supplied to the appliance and leave the door unlatched whenever the power was disconnected—an electromagnet instead of a permanent magnet as used by *General Electric*. This solution would work except for the rare instances of a power outage or the plug falling out of a receptacle, or when a child climbs into a box which is in actual operation in a home or on a porch.

The fatalities involving young children have usually occurred in ice boxes and refrigerators that have been abandoned or left on porches or



The ring on the hand of the user readily marked and scratched the cabinet, when there was not enough space between the door handle and the surface of the door. The Coldspot Super Mart shown in the picture is an example of this inadequate clearance space at this point.

in outbuildings, and many states now have laws requiring that the door, lid, or latch must be completely removed from any such refrigerator.

CR's tests

In CR's tests, the refrigerators were placed in an insulated test room in which the temperature was controlled at about 110 degrees. The refrigerator doors were open until all the parts were at room temperature. Doors were then closed and the refrigerators connected to the electric power and turned on; the electrical energy consumed and food chamber temperatures were measured as the appliance cooled down, until the average temperature reached 46 degrees or lower. Curves plotted from these data give a measure of the refrigerating capacity of each unit (adequacy of the size and power of the refrigeration unit to handle its load); they also give a measure of the "reserve capacity" of the machine, a point of practical importance in the use of any refrigerator, especially in places where there may be long spells of very hot summer weather, or high temperatures in the kitchen from cooking and baking operations.

The time for freezing the full complement of ice cubes was measured. The time to freeze cubes varied in each refrigerator with the location of the trays.

Next, the temperature of the test room was changed to 90 degrees, and the empty refrigerators, with power off, were allowed to come to that temperature. The controls were then set to give an average temperature in the food-storage space of 39 degrees. The temperatures in both freezer and refrigerator compartment were continuously measured by thermocouples connected to a recording instrument. Percent running time, number of cycles of operation, and energy consumption were also determined.

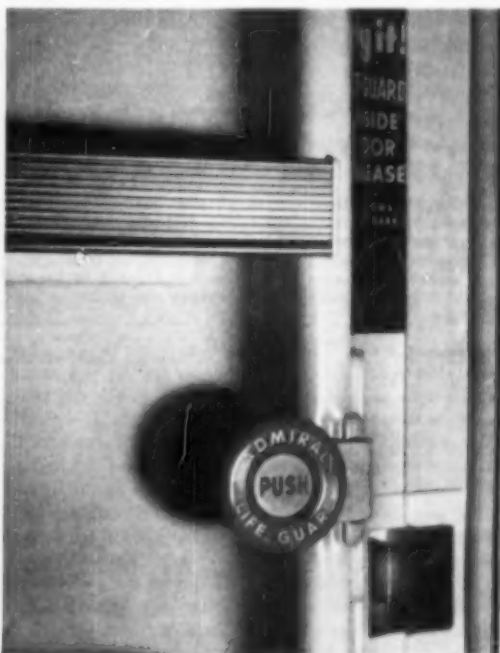
By experience it has been learned that the cost of operating a refrigerator loaded with food and used under average conditions in a home will often be close to the operating cost determined under test conditions in a room held accurately and constantly at 80 degrees. Approximate operating costs at 80 degrees, determined by calculation, are given in Table 2, page 11. If there is a considerable "food load," which implies that the refrigerator from time to time receives quantities of foods that are warm or at room temperature, the energy consumed by the refrigerator in 24 hours at a room temperature of 90 degrees will more closely determine the operating cost to the consumer. A range of variation of plus or minus 5 to 10 percent in energy con-

sumption of two refrigerators that are nominally alike is said to be common, due to unavoidable non-uniformity in manufacture.

Consumers' Research made a number of tests on each refrigerator to determine electrical shock hazard. These tests determined the amount of leakage or stray current, and checked the electrical insulation for its ability to withstand the usual overvoltage test. All the refrigerators tested were found to be satisfactory in both these tests. Capacities (total storage volume) given are those claimed by the manufacturers, which have been found in the past to be fairly accurate. Measurements to check those figures take considerable time and would have delayed issuance of the report.

Tests on the defrosters used in the *Kelsinator K46F-11S-R* and the *Crosley* refrigerators were not completed in time for inclusion in this BULLETIN. Ratings given these refrigerators are therefore tentative, pending tests of their defrosters, which will be reported in a later issue.

None of the refrigerators was considered noisy while operating. The *General Electric*,



The maker of the Admiral refrigerator provided a door release intended to permit opening of the door by a child that might be trapped inside. The release shows a greenish glow (phosphorescence), intended to attract the child's attention to the release device; the glow appears only when the button has been exposed to light.

Table 1

Table showing time required for the various refrigerators to be "pulled down" in temperature from 110°F (room temperature, outside and, at start, inside of box) to 46°. A short pull-down time per cubic foot indicates good reserve capacity in a refrigerator.

1	2	3	4	5	6	7
Make of refrigerator	Price, \$	Total storage capacity, cu. ft.	Price per cu. ft., \$	Number of hours required to reduce temperature in food storage com- partment to 46° F	Hours per cu. ft.	Ice-making test, hr. per lb. of ice cubes
Admiral DA-1110	220	10.1	21.80	6.1	0.60	1.6
Coldspot Super Mart	355*	12.2	29.10	4.2	0.35	0.9
Crosley RH-11	370	11.0	33.60	3.1	0.28	1.3
Crosley DAH-105	340	10.3	33.00	4.4	0.42	0.7
Frigidaire Super S-121-56	311	12.1	25.70	3.3	0.27	0.6
General Electric LB 10NB	230	9.8	23.50	2.6	0.27	0.7
Kelvinator K44F-11-R	290	10.6	27.40	3.7	0.35	1.5
Kelvinator K46F-11S-R	340	10.6	32.00	3.2	0.30	0.7
Norge Food-Stor C6 12	370	11.6	31.90	3.3	0.28	0.8
Wards Deluxe Tru-Cold	220*	11.1	19.80	3.5	0.32	0.8

*Plus shipping.

Kelvinator K44F-11-R and K46F-11S-R, Wards Deluxe Tru-Cold, and Norge Food-Stor were judged to be quieter when running than the others, however.

A. Recommended

Coldspot Super Mart (Sears-Roebuck's Cat. No. 46-6215) \$355, plus freight. (\$29.10 per cu. ft.)

In general, a well-designed refrigerator with bottom freezer compartment and fully automatic defrosting. The only refrigerator included in the test which maintained temperatures below 10° in the freezer compartment. Operating cost was higher than average, but this is the result to be expected from the desirably low freezing compartment temperatures.

Performance in test: Time required to lower temperature from 110° to 46°, 4.2 hr. (0.35 hr. per cu. ft.), somewhat longer than normal. In no-load test (see text), temperature in the freezer compartment was 7° (good). Cost of electricity for operation, per month, about \$3.35 (27c per cu. ft.), which is high, but about the same as the average for true refrigerator-freezer combinations, which also give even lower freeze-chamber temperatures (near zero). Time required to freeze 5 lb. of ice cubes, 4.5 hr. (0.9 hr. per lb., about average). The automatic defrost, which operated at 3 A.M. each day, was satisfactory. At a room temperature of approximately 80° with the refrigerator at its coldest setting, there was during defrosting a maximum rise in temperature of 19° in the freezer compartment (in 30 min. from the time defrosting started).

Comments: Interior was judged to be well arranged and easy to clean. The two roll-out shelves had a guard at the rear to prevent contents from falling off (desir-

able). A "bottle basket" (open-top roll-out drawer) was supplied for convenient storage of beverages. Shelves in the door had a guard to prevent bottles from tipping, and one shelf was large enough to accommodate 1-qt. beverage bottles and ½-gal. milk bottles. The two egg containers, 10 eggs each, were removable and of convenient design, judged especially good because shelf can be used for other storage if only 10 eggs are stored. Door could be opened when both hands were full. Door positioner holds door open in two positions, a desirable feature. The lower section of the door opposite the freezer was equipped with a built-in heater operated by a snap switch. Instructions called for the heater to be in the "on" position, when beverages were to be stored that would be damaged by freezing; in the "off" position, the space could be used for quick chilling of beverages and other items not likely to be damaged by freezing. (It is important, for safety against explosion of bottles, never to permit carbonated beverages to freeze.) 2

A. Recommended (Tentative)

Crosley, Model RH-11 (Crosley and Bendix Home Appliances Divisions, Avco Mfg. Corp., Cincinnati 25) \$370. (\$33.60 per cu. ft.)

A well-designed refrigerator with fully automatic defrosting. The freezer compartment has been omitted to provide maximum refrigerated space, but a small compartment is provided for making ice cubes. This refrigerator was somewhat above average in cost of operation.

Performance in test: Time required to lower temperature from 110° to 46°, 3.1 hr. (0.28 hr. per cu. ft.), good. Cost of operation per month was \$2.20 (20c per cu. ft.). Time required to freeze 8¾ lb. of ice cubes, 11.5 hr. (1.3 hr. per lb., longer than average).

Comments: The three roll-out shelves were so shaped at the rear as to prevent contents from falling off (very desirable). The door shelves, although not adjustable in position, were well placed, and the two lower shelves had guards to prevent tall bottles from falling out. The bottom door shelf was of sufficient size to accommodate 1-qt. beverage bottles and $\frac{1}{2}$ -gal. milk bottles. The three egg containers (total 24 eggs) were removable, of convenient design, and easy to clean. Door handle was of such design that door could be conveniently opened when hands were full. Vegetable crisper drawer had odd-shaped bottom but of good design; it does, however, limit storage capacity. 3

A. Recommended

Norge Food-Stor, Model C6 12 (Norge Sales Corp., Div. Borg-Warner Corp., Chicago 54) \$370. (\$31.90 per cu. ft.)

A refrigerator in which the freezer section has been omitted, to provide maximum volume of refrigerated space for ordinary foods. A small compartment is provided across the top for making ice cubes. The refrigerator, but not the ice-cube compartment, is defrosted automatically. (Ice-cube compartment requires manual defrosting.) This refrigerator was economical in operation, possibly owing to its not having any low-temperature food-storage space.

Performance in test: Time required to lower temperature

from 110° to 46°, 3.3 hr. (0.28 hr. per cu. ft.), good. Cost of operation per month was \$1.90 (16¢ per cu. ft.), which is good. Time required to freeze $5\frac{1}{2}$ lb. of ice cubes, 4.3 hr. (0.8 hr. per lb., shorter than average). The automatic defrosting (plate type), which defrosts each time the motor stops running, operated satisfactorily without raising significantly the air temperature in the food-storage compartment.

Comments: Interior judged to be well arranged and easy to clean. Had two roll-out shelves with a guard at the rear and sides to prevent contents from falling out. Two door shelves, for tall bottles, with guards at front to prevent bottles from falling over (desirable). One door shelf was large enough to accommodate 1-qt. beverage bottles and $\frac{1}{2}$ -gal. milk cartons. Door handle design was good; could be opened by the arm if the hands were full. Egg container (15 eggs) was removable and of convenient design. Meat storage tray was small, and shelf to which it is attached might tip when tray is pulled out. Tilting guard on shelves in door judged an advantage. The vegetable drawers were wedge shaped (with sloping bottoms), and consequently smaller in capacity than normal. This refrigerator must be set accurately level; otherwise defrost water drips onto the bottom glass shelf placed over the vegetable drawer. 3

Table 2

A comparison of monthly operating costs of ten 1956 refrigerators tested by CR. The electric rate is assumed to be $3\frac{1}{2}$ ¢ per kwhr. The figures in column 4a are monthly operating costs per cu. ft. of total storage space at 90° room temperature with general storage space temperature maintained at an average temperature of 39° (see text, pages 6, 9). This is a useful figure for comparing the efficiencies of several refrigerators in use of electricity.

1	2	3	4	4a	5	6
Make of refrigerator	Total storage capacity, cu. ft.	Estimated monthly operating cost at room temperatures of			% running time	Average air temperature in freezer, degrees
		80°	90°			
		Cost, \$	Cost, \$	Per cu. ft., cents		
Admiral DA-1110	10.1	1.35	1.80	18	55	20
Coldspot Super Mart	12.2	2.50	3.35	27	65	7
Crosley RH-11	11.0	1.65	2.20	20	45	No freezer
Crosley DAH-105	10.3	1.60	2.15	21	45	11
Frigidaire Super S-121-56	12.1	1.85	2.45	20	40	18
General Electric LB 10NB	9.8	1.30	1.75	18	40	20
Kelvinator K44F-11-R	10.6	1.20	1.60	15	45	20
Kelvinator K46F-11S-R	10.6	1.25	1.65	16	40	19
Norge Food-Stor C6 12	11.6	1.40	1.90	16	50	No freezer
Wards Deluxe Tru-Cold	11.1	1.40	1.90	17	50	15

	Admiral DA-1110	Coldspot Super Mart	Crosley RM-11	Crosley DAH-105	Frigidaire Super S-121-56
Dimensions					
Total volume, cu. ft.	10.1	12.2	11.0	10.3	12.1
Freezer space volume, cu. ft.	1.8	2.0	(0.6 cu. ft., for ice-cube trays only)	1.2	1.17
Shelf area, sq. ft.	17.5	20.8	18.5	15.8	21.5
Height, in.	54.5	61.5	58.0	58.0	64.5
Width, in.	28.5	30.8	28.5	28.5	31.0
Depth, in.	32.0	31.5	32.3	31.8	30.5
Features					
No. of cabinet doors	Single	Single	Single	Single	Single
Freezer location	Full width at top with drop-down spring-return door	Full width at bottom with roll-out basket	—	Full width at top with drop-down spring-return door	Full width at top with drop-down spring-return door
Defrosting	Push-button-electric	Automatic (clock type)	Automatic (clock type)	Automatic (clock type)	Manual
Ice-cube trays	1 quick release 1 plastic cups	3 quick release	5 quick release	3 quick release	3 quick release
Main compartment					
No. of shelves and type	4 fixed position	2 roll-out 1 full width 2 half width	1 fixed position 3 roll-out	2 fixed position 1 roll-out	3 fixed position 1 adjustable
Meat drawer	No	Yes	Yes	Yes	Yes
Chiller tray	Yes	No (see listing)	No	No	Yes
Crispers or vegetable drawers	1 full width	1	1 full width	1 full width	2
Door					
No. of shelves	3 fixed position	3-2/3 fixed position	3 and 2 half shelves, fixed position	3 fixed position	3-2/3 fixed position
Butter compartment	Yes	Yes (with temp. control)	Yes	Yes	Yes
Egg compartment	Yes (18 eggs)	Yes (20 eggs)	Yes (24 eggs)	Yes (12 eggs)	Yes (22 eggs)
Cheese compartment	No	Yes	No	No	No

B. Intermediate

Admiral, Model DA-1110 (Admiral Corp., Chicago 47) \$220. (\$21.80 per cu. ft.)

A standard refrigerator of simple, neat design with across-the-top freezer and push-button (semiautomatic) defrosting. Very economical in operation, but this was achieved at the cost of temperatures in freezer space being too high. Had inside door release.

Performance in test: Time required to lower temperature from 110° to 46°, 6.1 hr. (0.6 hr. per cu. ft.), longer than average. Temperature in the frozen food compartment was 20° (too high). Cost of operation per month was \$1.80 (18c per cu. ft.), which is low. Time required to freeze 3 lb. of ice cubes, 5 hr. (1.6 hr. per lb., much longer than average and due at least in part to use of individual plastic ice-cube moulds in one tray). Semi-automatic defrosting, which CR considers the best type, was satisfactory. During the defrosting period (heater was on about 30 min.), temperature in the freezer compartment rose to about 55°; however, with the push-button type, the housewife can remove the frozen food to the general storage space during defrosting without significant thawing of the food.

Comments: Shelves were well arranged and judged easy to clean. 1-qt. beverage bottles could be stored on one door shelf, but not the 1/2-gal. milk containers. The egg container (18 eggs) was not removable, and though of convenient design for storage, was hard to clean. Design of the door handle was such that the door could be opened even though both hands were full. 1

B. Intermediate

GE, Model LB 10NB (General Electric Co., Louisville 1, Ky.) \$230. (\$23.50 per cu. ft.)

A standard refrigerator of simple, neat design, with across-the-top freezer and manual defrosting. This refrigerator was economical in operation, but the temperature in the freezer compartment was considered too high.

Performance in test: Time required to lower temperature from 110° to 46°, 2.6 hr. (0.27 hr. per cu. ft.), good. Temperature in the frozen food compartment was 20° (too high; see text). Cost of operation per month, \$1.75 (18c per cu. ft.), low. Time required to freeze 5 lb. of ice cubes, 3.7 hr. (0.7 hr. per lb., shorter than average).

of Ten 1956 Refrigerators

General Electric LB 10NB	Kelvinator K44F-11-R	Kelvinator K46F-11B-R	Norge Food-Ster C6 12	Wards Deluxe Tru-Cold	
					Dimensions
9.8	10.6	10.6	11.6	11.1	Total volume, cu. ft.
1.1	1.5	1.5	(0.75 cu. ft. for ice trays only)	1.5	Freezer space volume, cu. ft.
16.2	16.8	19.3	20.2	18.6	Shelf area, sq. ft.
55.5	59.0	59.0	60.5	59.3	Height, in.
31.0	28.3	28.3	27.8	30.8	Width, in.
29.3	29.8	29.8	32.5	27.3	Depth, in.
					Features
Single	Single	Single	Single	Single	No. of cabinet doors
Full width at top with door hinged at right	Full width at top with drop-down spring-return door	Full width at top with drop-down spring-return door	—	Full width at top with drop-down spring-return door	Freezer location
Manual	Manual	Semiautomatic (push-button type)	Plate type*	Manual	Defrosting
3 quick release	2 quick release	3 quick release	4 quick release	3 plastic dividers	Ice-cube trays
					Main compartment
1 fixed position 2 adjustable	3 fixed position 1 adjustable	3 fixed position 1 roll-out	2½ fixed position 2 roll-out	4½ fixed position	No. of shelves and type
No	Yes	—	Yes	No	Meat drawer
Yes	Yes (serves as meat drawer)	Yes (serves as meat drawer)	No	Yes	Chiller tray
2	2	2	2	1 full width	Crispers or vegetable drawers
					Door
2/3 shelf fixed position 3 adjustable position	4 fixed position	4 fixed position	4 fixed position	3 fixed position	No. of shelves
Yes	Yes	Yes	Yes	Yes	Butter compartment
Yes (12 eggs)	Yes (10 eggs)	Yes (10 eggs)	Yes (15 eggs)	Yes (18 eggs)	Egg compartment
No	Yes	Yes	Yes	No	Cheese compartment

*See text.

Comments: Judged, on the whole, relatively easy to clean. Egg container (12 eggs) was built into door, not removable, and was difficult to clean. The magnetic door latch, though convenient, is considered a feature of minor importance to the user, and the appliance had the disadvantage that the door could not be opened by the arm if the hands were full. (This type of door could be considered to assure safety, only for a trapped child with sufficient strength to push the door open.) The door shelves were not deep enough to accommodate ½-gal. milk cartons, and 1-qt. beverage bottles fitted too tightly. 1

B. Intermediate

Wards Deluxe Tru-Cold (Montgomery Ward's Cat. No. 69—1136R) \$220, plus freight. (\$19.80 per cu. ft.)

A refrigerator of conventional design, simple and neat, with across-the-top freezer compartment. Manual defrosting. This refrigerator was economical in operation, but temperature in the freezer compartment was considered somewhat too high.

Performance in test: Time required to lower temperature from 110° to 46°, 3.5 hr. (0.32 hr. per cu. ft.), about average. Temperature in the frozen food compartment was 15°. Cost of operation per month, \$1.90 (17c per cu. ft.), low. Time required to freeze 4½ lb. of ice cubes, 3½ hr. (0.8 hr. per lb., shorter than average).

Comments: Shelves judged easy to clean. Door shelves were neither sufficiently wide nor separated enough to accommodate 1-qt. beverage or milk bottles, but were very easy to clean. Crisper tray had partial sloping bottom which reduced available storage space. Egg container (18 eggs) was built into door and not removable, but judged fairly easy to clean. 1

B. Intermediate

Frigidaire Super, Model S-121-56 (Frigidaire Div., General Motors Corp., Dayton 1, Ohio) \$311. (\$25.70 per cu. ft.)

A standard refrigerator with across-the-top freezer, and manual defrosting. The temperature in the freezer compartment was considered too high, though cost for elec-

tricity was somewhat above average (usually high freezer temperatures do not go with high operating cost).

Performance in test: Time required to lower temperature from 110° to 46°, 3.3 hr. (0.27 hr. per cu. ft.), good. Temperature in the frozen food compartment was 18° (too high; see text). Cost of electricity for operation per month was \$2.45 (20c per cu. ft.), which is higher than average. Time required to freeze 5 lb. of ice cubes, approximately 3 hr. 15 min. (0.6 hr. per lb., shorter than average).

Comments: Shelves in the storage compartment would be somewhat difficult to clean because of the grooves underneath, but the shelves were of good strength and rigidity. Egg container (22 eggs) had three removable trays but was judged to be of poor design. It was hinged at the bottom, and if not properly latched, could fall down. If this occurred when the door of the refrigerator was being closed, there would be damage to the plastic "meat tender" and egg container. The egg container must be used with care; otherwise it may be unintentionally released from its supports on the door, dropping the eggs to the floor. The two bottom door shelves were wide enough to accommodate the 1/2-gal. size milk containers, but only the bottom door shelf will accommodate 1-qt. beverage bottles. Door could be opened by the arm if hands were full, although operation in this manner was rather inconvenient. 2

B. Intermediate

Kelvinator, Model K44F-11-R (Kelvinator Div., American Motors Corp., Detroit 32) \$290. (\$27.40 per cu. ft.)

A standard refrigerator with across-the-top freezer. Manual defrosting. This refrigerator was very economical in operation, but the temperature in the freezer compartment was considered too high.

Performance in test: Time required to lower temperature from 110° to 46°, 3.7 hr. (0.35 hr. per cu. ft.), somewhat longer than normal. Temperature in the frozen food compartment was 20° (too high). Cost of operation per month, \$1.60 (15c per cu. ft.), lowest of all refrigerators tested. Time required to freeze 3.3 lb. of ice cubes, approximately 5.1 hr. (1.5 hr. per lb., much longer than average).

Comments: Shelves were well arranged and easy to clean. Door shelves would not accommodate 1-qt. beverage bottles or 2-qt. milk containers. Egg container (10 eggs) not removable and hence hard to clean. Door handle was not of a design permitting the door to be conveniently opened when hands were full. 2

B. Intermediate (Tentative)

Crosley, Model DAH-105 (Crosley and Bendix Home Appliances Divisions) \$340. (\$33 per cu. ft.)

A standard refrigerator of simple, neat design, with across-the-top freezer. Fully automatic defrosting. This refrigerator was somewhat above average in cost of operation, but freezer temperatures came much closer to CR's requirements in this respect than any other model in the present test except Coldspot Super Mart.

Performance in test: Time required to lower temperature from 110° to 46°, 4.4 hr. (0.42 hr. per cu. ft.), longer than average. Temperature in the freezer was 11°. Cost of operation per month, \$2.15 (21c per cu. ft.), somewhat above average. Time required to freeze 5 1/4 lb. of ice cubes, 3.9 hr. (0.7 hr. per lb., shorter than average).

Comments: Shelf area in this refrigerator was somewhat small; otherwise interior arrangement was judged satisfactory. Ease of cleaning judged average. Door shelves had guard rails and the bottom shelf was designed to accommodate 1-qt. beverage bottles and the new 1/2-gal. milk bottles. Egg container (12 eggs) not removable. Vegetable drawer had odd-shaped but well-designed bottom, which reduced storage capacity. Door latch (push-button type) of good design. Could easily be opened when hands were full. 3

B. Intermediate (Tentative)

Kelvinator, Model K46F-11S-R (Kelvinator Div., American Motors Corp.) \$340. (\$32 per cu. ft.)

Essentially the same as Kelvinator Model K44F-11-R, except equipped with semiautomatic (push-button) defrosting. The K46F-11S-R has more shelf area and has three instead of two ice cube trays.

Performance in test: Time required to lower temperature from 110° to 46°, 3.2 hr. (0.30 hr. per cu. ft.), about average. Temperature in the frozen food compartment was 19° (too high). Cost of operation per month, \$1.65 (16c per cu. ft.), low. Time required to freeze 5 lb. of ice cubes, 3.6 hr. (approximately 0.7 hr. per lb., shorter than average).

Comments: Stops on the one sliding shelf not positive enough in action to prevent shelf from coming out and dropping its load. For other comments, see Kelvinator K44F-11-R. 3

Acknowledgments

The following is a list of credits for pictures supplied by outside sources.

Cover—Coldspot Super Mart, Sears, Roebuck & Co.; Crosley DAH-105, Crosley and Bendix Home Appliances Divisions, Avco Mfg. Corp.; Norge Food-Stor C6 12, Norge Sales Corp., Subsidiary of Borg-Warner Corp.

Page 5—Admiral Corporation; Montgomery Ward & Co., Inc.; Frigidaire Division of General Motors Corp.

Page 25—Siemens New York Inc.; American Elite, Inc.



Training pants

WHEN DIAPERS are discarded, infants begin wearing tightly fitted knitted underpants. These underpants are called "training pants" because they are useful in helping a small child to graduate from diapers.

Training pants have an elastic band at the top, which should be loose enough not to bind the child's body but snug enough to hold the pants in place. The pants can thus easily be slipped off by the mother at first, and later they can easily be managed by the child himself.

Training pants are made of knit fabrics, which are stretchable and fit the body, yet permit freedom of action. Furthermore, they are porous and permit absorption and evaporation of perspiration, and they are soft and pliable. Knit fabrics also do not need to be ironed. The only real problem is that they have a tendency to shrink, and shrinkage can be so great as to make a garment too small, and thus quite unsatisfactory. Some of the training pants washed and dried in CR's study shrank as much as 20 percent, equivalent to nearly 2 inches, from the top of the band to the bottom of the crotch.

CR found that most of the training pants on the market today can be classified, so far as style goes, by the way in which the knit fabric was used in their construction (see Figure 1). The two-way style characteristically has a large

pad. On some of the "regular" style pants, the pad is relatively small, and this might be considered a disadvantage, especially if the garment were to be worn by a very young child, only recently out of the diaper class. A large pad also reduces the chances of the child's being chilled when the garments are wetted.

In its study, Consumers' Research bought samples of 20 different brands of training pants in a large Eastern and a large Midwestern city. The brands selected were those in widest sale in the two localities. Because training pants are often outgrown before they are worn out, durability was considered less important in the evaluation than good design and workmanship.

The construction of the garments was evaluated with special attention being paid to the seams and to the area of the crotch pad, a large pad being considered most desirable. Seams of all training pants, regardless of style, should be flat, smooth, and soft, for the comfort of the child. Raised seams were considered undesirable.

There were three kinds of waistbands: (1) elastic ribbon; (2) a smooth fabric tunnel for an elastic; and (3) a shirred or tucked tunnel. The shirred or tucked tunnel is sometimes unsatisfactory because the thread of the stitching may break as the elastic is stretched. Faults of sewing were determined by inspection of the gar-

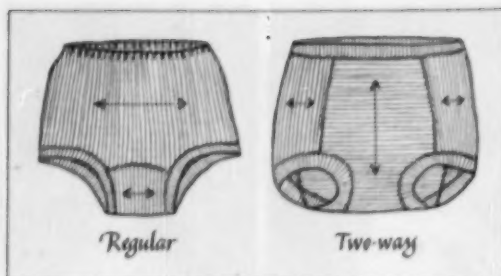


Figure 1—Most training pants can be classified, so far as style goes, by the way in which the knit fabric was used in its construction. On some pants, called for convenience the "regular type," the ribs of the fabric all go one way, up and down; in another style, called for convenience a "two-way" style, the fabric goes two ways, customarily from side to side across the center of the garment to the crotch and up and down over the hips. By this construction, the crotch panel "give" is up and down, and the side sections stretch around the body.

ments, inside and out; items noted were irregular hems, unsecured fabric, loose "chain-offs," loose thread ends, and unsecured stitching. The closeness of weave, strength, and thickness of the fabric were also measured.

Two samples of each brand were laundered 15 times. After laundering, one of the two samples was dried on a line, while the other was dried in an electric clothes dryer set at the low temperature setting. On the whole, the training pants that were dried in the dryer shrank a little more than those dried on the line. Shrinkage is usually not considered an important factor in service. However, shrinkage of 15 percent or more in either direction in pants dried by either method is noted in the listings. Except as noted, training pants were made principally of cotton knit fabric.

A. Recommended

"Fruit of the Loom" (Montgomery Ward's Cat. No. 31—360; Earnshaw Knitting Co., Empire State Bldg., New York 1) Three for \$1.45, plus postage. Two-way style. Strong Swiss rib-knit fabric. Elastic in smooth tunnel. Good workmanship and construction. **2**

Gibbs (Gibbs Underwear Co., Empire State Bldg., New York 1) 59c. Two-way style. Strong rib-knit fabric. Elastic in waistband in smooth tunnel. Good workmanship and construction. **2**

Honeysuckle, Two-way Stretch (Sears-Roebuck's Cat. No. 29—1058) Three for \$1.39, plus postage. Two-way style. Strong rib-knit fabric. Elastic in waistband in smooth tunnel. Good workmanship and construction. **2**

Carter's (Wm. Carter Co., Needham Heights 94, Mass.) 85c. "Regular" style; no side seams. Strong rib-knit fabric. Elastic ribbon at waistband is joined

by plain seam with raw edges (undesirable). Good workmanship. Fairly good construction. **3**

Carter's Tykes (Wm. Carter Co.) 69c. Two-way style. Strong Swiss rib-knit fabric. Elastic in smooth tunnel. Good workmanship and construction. **3**

Carter's Tykes (Wm. Carter Co.) 85c. Two-way style. Strong rib-knit fabric. Elastic in smooth tunnel. Good workmanship and construction. **3**

Honeysuckle Two-way Stretch Nylon (Sears-Roebuck's Cat. No. 29—1069) 69c, plus postage. Two-way style. Strong rib-knit fabric. "Elastic" nylon fabric, with cotton rib-knit fabric pad. Elastic in smooth tunnel. Good workmanship and construction. **3**

Vanta (The Vanta Co., Inc., Brockton, Mass.) 69c. Two-way style. Relatively weak Swiss rib-knit fabric. Elastic in smooth tunnel at waist, elastic in leg cuffs. Good workmanship and construction. **3**

B. Intermediate

Grants Bouncing Baby (Sold by W. T. Grant Co. Stores) 39c. "Regular" style. Strong flat-knit fabric; two layers used. Elastic in shirred tunnel. Good workmanship; fair to good construction. Shrinkage in length of pants dried in clothes dryer was greater than 15%. **1**

Trebor (Trebor Knitting Mills Co., 250 44 St., Brooklyn 32, N.Y.) 39c. Two-way style. Rib-knit fabric, thin, but strong and finely knit. Elastic in smooth tunnel at waist, elastic in leg cuffs. Fair workmanship. Size of leg openings relatively small, and sides short. **1**

Ward's Triple Crotch (Montgomery Ward's Cat. No. 31—356) Three for \$1.17, plus postage. Regular style. Thin, fine rib-knit fabric, not so strong as other fabrics, but two layers are used. Elastic in smooth tunnel. Good workmanship. Small pad. Shrinkage in length of pants dried in clothes dryer was greater than 15%. **1**

Nazareth (Nazareth Mills, Inc., 271 Church St., New York 13) 49c. Regular style. Very strong rib-knit fabric. Elastic in shirred tunnel, and elastic in leg cuffs. Fair to good workmanship and construction. **2**

C. Not Recommended

Cozy-Dozy (Quality Mills, Inc., Mount Airy, N.C.) 25c. Regular style. Relatively weak, thin, flat knit. Elastic in shirred tunnel. Relatively poor workmanship; unsecured seams, and fabric not completely turned under at waistband hem. **1**

Fidelity (Sold by Murphy's 5-and-10-cent stores) 25c. Regular style. Relatively weak medium-weight rib-knit fabric. Elastic in shirred tunnel. Relatively poor workmanship; unsecured seams. Shrinkage in length, relatively great. **1**

Honeysuckle (Sears-Roebuck's Cat. No. 29—1050) three for 93c, plus postage. Regular style. Thin, flat-knit fabric, relatively coarse and weak, but two layers are used. Elastic in shirred tunnel. Fair workmanship; fabric not completely turned under at waistband

hem, and loose threads. Small pad. Shrinkage in length, relatively great in dryer-dried sample. 1

Honeysuckle (Sears-Roebuck's Cat. No. 29-1051) Six for \$1.38, plus postage. Regular style. Relatively weak, thin, flat-knit fabric. Elastic in shirred tunnel. Relatively poor workmanship; loose thread, irregular tunnel. Small pad. 1

Med. Lark (Sold by Murphy's 5-and-10-cent stores) 29c. Regular style. Relatively weak, thin, flat-knit fabric, but two layers used. Elastic in shirred tunnel. Poor workmanship; seams unsecured. Shrinkage in length, relatively great. 1

Spencer's (Mt. Airy Knitting Co., Mt. Airy, N.C.) 29c. Regular style. Relatively weak, thin, flat-knit fabric, but two layers are used. Elastic in shirred tunnel. Relatively poor workmanship; unsecured threads, and fabric not completely turned under at waistband

hem. Raised side seams (judged undesirable). Shrank more than any other training pants tested: 13% in width and 20% in length in the garment dried in the electric clothes dryer; 14% in length in the garment dried on the line. 1

Ward's Imperial Thrift Panty (Montgomery Ward's Cat. No. 31-359) Six for \$1.35, plus postage. Regular style. Flat-knit, somewhat coarse fabric. Elastic in shirred tunnel. Poor workmanship; unsecured seams. Small pad. Shrinkage in length, relatively great in dryer-dried sample. 1

Spanky Pants (Wm. Carter Co.) 69c. Regular style, no side seams. Relatively weak lightweight flat-knit fabric. Elastic ribbon at waistband is joined by plain seam with raw edges (undesirable). Good workmanship; fairly good construction. Short side and front measurements. Had raised seam (judged undesirable) on medium-sized pad. 3

Deceptive practices in the sale of paint

SUBSCRIBERS, particularly those in business or industry, are warned against the practice of a number of companies which offer by what purports to be a personal letter a supply of "our best quality" of white paint. This is supposed to be part of a small stock of high-grade paint remaining at a warehouse near the person addressed. The company's name will often be one which rather closely resembles that of one or two large and favorably known producers of paint and pigments. The alleged special lot of paint is to be disposed of as a sort of close-out, at a sacrifice price.

One of these firms has had trouble with the Federal Trade Commission and later with a federal court which levied a fine of \$4000 because the seller failed to comply with an official order to abandon its deceptive practices, and another firm will very likely be in difficulties of a similar sort if its operations continue. The paint is asserted to be of the company's best quality, "expensively formulated," and "fully guaranteed." Such claims are, of course, without practical meaning for the purchaser, who will do well to recall that even paint from the most reputable sources presents problems enough for the consumer, and that it is wholly unwise to take advantage of alleged bargain offers from companies whose background is completely unknown, or questionable.

The St. Louis Better Business Bureau has given a great deal of attention to this paint-

selling promotion and has thereby performed a valuable public service. The Bureau had a sample of paint tested, and also a lot of paint as actually supplied on a fifty-gallon order. The analysis showed that the paint delivered in quantity was far inferior to the sample which had been offered as a basis for purchase. The 50-gallon delivery had about 10 times the water content, and less than one-half as much titanium oxide pigment as the sample which had been submitted earlier. Moreover, the paint was made in part from salvaged or reworked paint material. This, contrary to the company's implication in its advertising, is not a mark of a good paint, but of an inferior, sub-standard product.

According to information recently received from the Indianapolis Better Business Bureau, firms in that area are again getting letters from the National Titanium Company (Vernon, California) inviting purchase of "our highest quality paint" at bargain prices. The Indianapolis Bureau comments that the operator of the National Titanium Company is not easily discouraged, even after some 13 years of difficulties with the Federal Trade Commission and finally with a federal court order penalizing him for not stopping his misrepresentations.

Anyone tempted to purchase an item of this kind will do well to re-read the discussion in our BULLETIN for September 1953, entitled, "It's Often Wise to Check up on a Company before You buy." (Reprint available, at 15c.)

Trash burners

Blitz-Burner—a well-built trash burner for burning paper, rubbish, and a limited amount of reasonably dry garbage. This burner incorporates many desirable features and is recommended particularly for those who need to take precautions

against the setting of fires accidentally in near-by fields, woods, or buildings. The burner is so designed that the trash, which is ignited from the top, burns fairly slowly and without producing the many sparks that often rise from

an ordinary trash burner. It is sturdily constructed, and can be moved conveniently from place to place as it has a suitably placed handle and is mounted on two wheels. It holds about $2\frac{1}{2}$ bushels.

The *Blitz-Burner* is available from the Montamower Distributing Company, 334 Keeler Building, Grand Rapids 2, Michigan, at \$29.95 (a grill and charcoal burner accessory is \$4.95 extra); both f.o.b. factory. The appliance was still in good condition after about 12 months of service, except for noticeable rusting of the bottom plate. It is believed that the life of the unit will be determined by the failure of the bottom plate by corrosion. It is estimated, however, that the *Blitz-Burner* will give several years' service, except possibly near the seacoast. No guarantee provided with this burner. **A3**



Alsto Saf-T-Burn does a satisfactory job of burning trash although it is not the equal of the *Blitz-Burner*, in that the opening through which trash is fed is somewhat too small for convenient emptying of wastebaskets, and the *Alsto* lacks the important advantages incorporated in the *Blitz-Burner* for controlling the rate of burning and limiting the tendency to produce sparks. After about $2\frac{1}{2}$ years of service, the

Alsto Saf-T-Burn unit had become badly warped and rusted. The *Alsto* burners, made by the Alsto Co., 4007 Detroit Ave., Cleveland 13, are available in several models ranging in price from \$10.95 for a 2-bushel burning capacity to \$26.95 for a 3-bushel burning capacity. A stainless-steel model is \$67.50. Manufacturer offers 10-day money-back guarantee and 90-day warranty (replaces defective parts). **B1**

Iron Horse Combustionalr, for burning paper and rubbish, but not garbage. The illustration below shows how the unit tested looked after about 12 months of service. It was deteriorated to the point of being useless. It consisted of a $2\frac{1}{2}$ -bushel galvanized can with the lower half and cover perforated for circulation of air and a center air flame tube. The list price of the *Iron Horse* is \$7.95 from Rochester Can Company, Inc., 100 Greenleaf St., Rochester 9, New York. No guarantee with this burner. **C1**



Outdoor garbage disposal device

THE REPORT presented here is based on the results of a continued use test with the *Bard-Matic Garbage Eliminator*. An earlier, tentative report on this appliance appeared in the June 1955 issue of CONSUMERS' RESEARCH BULLETIN.

At the conclusion of the first test, in March of 1955, the appliance was moved to a new location in accordance with the manufacturer's instructions, and thereafter approximately two pounds of garbage a day were put into it. This amount was estimated as the waste that could be expected to come from the kitchen of a family of four persons. During the 14 months since the *Bard-Matic* was relocated, about 800 pounds of kitchen wastes, including coffee grounds, egg shells, citrus and melon rinds were placed in it.

At the end of this test period, the garbage in the unit was at a level about 30 inches below the lid; the appliance was slightly over half full. There was no infestation of flies, insects, or rodents, and no odors outside of the unit, and it was not molested by dogs or other animals. It was noticed that decomposition and reduction of the volume of garbage were slowed considerably during the winter months.

The newer model shows some modifications. The improvements relate to the paint, corrosion resistance, and control of insects and odors.

The makers of *Bard-Matic* have corrected some of the earlier claims that were exaggerated, and the present claims are more closely in accord with what one can expect from the device. Earlier advertising gave the impression that,

once the device was installed, it would dispose of garbage for an indefinite period. In the instruction booklet, the manufacturer now advises the purchaser to relocate the unit approximately once a year, preferably each fall, "to assure maximum capacity during the winter months." Another earlier claim indicated that the garbage would be completely decomposed and that, if desired, the material resulting from use of the appliance could be used for composting. Actually, over an extended period, the garbage can be expected to lose about 75 percent of its original weight, but not all the material would be suitable for use as compost by the time the appliance had to be moved.

On the basis of the further testing conducted by CR, and on information from other sources, we believe most families will find the *Bard-Matic* satisfactory for the disposal of kitchen wastes, excluding, of course, such things as tin cans, boxes, papers, bottles, and rags.



Test unit in use—after about two years of service. During this period, the *Bard-Matic* was relocated once.

The *Bard-Matic Garbage Eliminator* as it looks before being installed in the ground, the lid open. Appliance shown here is the new model, which can be identified by the perforations in the lower section.



A. Recommended

Bard-Matic (Bardmatic Corp., Box 266, Muskegon, Mich.) \$39.95. Base of unit (part below ground) is 22 in. in diameter and 22 in. high. Top section is 23 in. high and tapers down to 10½ in. in diameter at the lid opening. †May warrant a B rating where winters are long and cold.



Treating rugs with soil retardants

SOIL RETARDANTS or soil-resisting treatments are terms which have become familiar to the householder recently, as a result of new developments in the rug industry and the availability of the new kind of rug-treatment products for home use. There was a time when almost all rugs were made of wool, but nowadays many are of cotton or man-made fibers or blends of wool with other fibers. Many of these newer rugs and carpets tend to become soiled more quickly than wool; for this reason, some are treated with anti-soiling compounds by the manufacturer before they reach the consumer's home.

A soil-resistant finish is used to reduce the rate of soiling of a rug or fabric, so that the carpet or other fabric retains its new appearance longer. It does not prevent soiling. Soil retardants, such as *Dellay* and *Retard*, are said to produce their effect by forming a film or coating over the fiber and by filling in the microscopic pits and crevices that all fiber surfaces possess in varying degrees. Thus, soil retardants prevent much of the soil from getting down into the minute pits and crevices and tend to retard the discoloration and darkening of the pile.

Soil-resistant compounds can be sprayed or

brushed, or applied in some other fashion on freshly cleaned surfaces of rugs, upholstery fabrics, lamp shades, painted walls, wallpaper, and draperies. Retardants are available in pint-, quart-, and gallon-size bottles. The usual pint size, which sells for about \$1.30, treats one 9 x 12 rug, according to the manufacturer's claims. Obviously, it is important to have any fabric that is to be treated cleaned first, for if the fiber is already soiled before the retardant is applied the retardant may act to lock the dirt on tighter, and thereby increase cleaning difficulties later on. When the rug is cleaned, the soil retardant is removed, and the rug treatment should be reapplied.

Most of the soil retardants on the market fall under one of two types: one kind is based principally on a chemical called *Ludox*, colloidal silica made and sold by duPont. This material comes in liquid form, is colorless, odorless, and non-flammable. Retarders of the other type, exemplified by American Cyanamid's *Juvenon*, are colloidal solutions of metallic oxides. So far as has been determined, according to a representative of one manufacturer, the retardants have no effect on the durability of carpet fibers

and on the effectiveness of cleaning that is done later on.

CR, in its test, sprayed the solution on clean rug samples, including all-wool rugs, all-rayon, all-cotton, and blends of wool and rayon, wool and acetate, and acetate and nylon. CR found that among the treated rugs, the lighter colors showed a slightly diminished rate of soil accumulation when exposed to heavy traffic for a period up to three months. At the end of this time, however, there was little, if any, difference in appearance between the portions treated with soil retardant and those that had not been treated; all needed cleaning at about the same time.

Sample rugs treated with retardant in CR's laboratory showed that the fibers were rendered somewhat harsh by the application, although the effect was not objectionable or particularly noticeable when one was walking on the rug. As it is very difficult to apply the retardant liquid uniformly across the rug, the tendency for the rug to become soiled will be variable and the effect a bit uneven.

It has been reported that anti-soiling agents tend to increase the tendency of some fibers, particularly cotton and rayon fibers, to crush and mat, and that sometimes there may be a reduction of colorfastness.

Consumers may be interested in a method that has been suggested by the trade for determining when a rug should be cleaned profession-

ally. Simply spread the carpet pile with the fingers and shine a flashlight into the gap to see how deep the dirt is embedded. The darker band on the upper portion of the yarns indicates surface soiling which has caused dulling of the colors. If this band extends to half the depth of the yarn, it is time to have the rug cleaned professionally, according to the National Institute of Rug Cleaning.

The Institute recommends that for proper care every rug be given a light going over each day with a vacuum cleaner or a carpet sweeper. Then, once or twice a week the rug should be given a thorough cleaning with a vacuum cleaner. Following this procedure enhances the appearance of the rug, reduces the wear, and postpones the time when the rug will need to be cleaned by a professional. Professional cleaning removes surface and embedded dirt and surface discolorations.

It's wise never to use soap at any time on rugs or carpets. Soap leaves a residue which attracts soil. Any first-aid treatment of a rug or carpet should be done with a mild soapless synthetic detergent, such as *Breeze*, *Dreft*, *Trend*, or *Vel*. Never use ammonia, for it can damage fibers and cause serious alteration of the dyes. Beating a rug with a broom or a beater, once a popular practice at housecleaning time, is a bad procedure, for it may cause breaking of fibers and bindings.

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Borgward Isabella station wagon

A RELATIVELY new German import, the *Borgward*, is the first foreign station wagon tested by CR. Though somewhat smaller than the *Rambler* station wagon, with which it is compared in this article, it has considerable room for cargo. The *Borgward* would be distinctly worth careful consideration by many families who do not need the amount of space provided by the larger American station wagons, but do want good maneuverability, easy parking, and economical operation. The main drawback is the comparatively high price, \$2475 at port of entry, which is somewhat higher than the *Rambler*. (Persons wishing to buy this car in Europe can obtain it at \$1650, in Bremen, West Germany.)

The *Borgward* has independent rear wheel suspensions and a hydraulically operated clutch, features not found in any American car. The tail gate construction is also unusual; the back opens as a wide door, in a single unit and is hinged at the left in a manner similar to the usual side door of a car, but the rear window is fixed. This construction eliminates one common cause of exhaust fumes being drawn into the car.

This kind of door does have the disadvantage that cargo longer than 55 inches cannot be transported, as it can in American station wagons, by lowering the tail gate to a horizontal position and leaving it there, with the object carried pro-

jecting somewhat from the rear, if necessary.

Tires (6.40 x 13) are available from American manufacturers. The spare tire is located under the rear floor, which rises on a hinge. A good kit of tools including a tire gauge and a rubber tube for bleeding the hydraulic brake system are provided. The jack fits into a receptacle on each side of the frame and lifts front and rear wheels on one side at the same time.

This car had several minor disadvantages: Controls on the dashboard were not identified or illuminated. Ventilator windows at the front when opened part way permitted rain to enter the car and caused some wind noise. The cranks for the main front windows were poorly located and hence difficult to operate by the hand nearest them. The step-up from the floor to the door opening made getting out of the car somewhat difficult; indicating lights were used in place of an ammeter and oil pressure gauge. The accelerator pedal was not well placed, and caused discomfort to one user on a long drive. This car had four forward speeds, all "synchronized"; the shift to reverse gear, however, was somewhat stiff and hard to operate when the car was new. In spite of its low horsepower, the car had surprising hill climbing ability and with a good start would climb fairly steep hills without need for changing gear. It had ample power for

SPECIFICATIONS

	Borgward Isabella Combi	Rambler Station Wagon
Price, dollars	\$2475	\$2295
Engine		
No. of cylinders	4	6
Piston displacement	91 cu. in.	195.6 cu. in.
Brake horsepower (rated)	60 at 4700 rpm.	120 at 4200 rpm.
Compression ratio	6.8 to 1	7.47 to 1
Oil filter	yes	Optional
Cooling system capacity	7 qt.	11 qt.
Runs on regular gasoline	yes	yes
Chassis	Single-unit body frame	Single-unit body frame
Wheelbase	102.5 in.	108 in.
Over-all length	173 in.	194 in.
Width	67.2 in.	71 in.
Tires	6.40 x 13	6.40 x 15
Minimum road clearance	7 in.	6.3 in.
Turning diameter	36 ft. approx.	37.4 ft.
Steering wheel turns (full right to full left)	3.3	4.7
Other details		
Battery	6-volt 84-amp.-hr.	12-volt 45-amp.-hr.
Gasoline tank	11 gal.	20 gal.
Windshield wipers	Electric	Vacuum
Curb weight	2485 lb.	3300 lb.
Dimensions of cargo space, inches		
Usable width between wheel housings	40	43.5
Width of rear opening	30.5	46
Height of rear opening	29	24.5
Average height	35	28
Depth, back of rear seat to closed tail gate	28.8	40.5
Depth, rear seat folded, to closed tail gate	55	71

fast driving on level roads. An excellent, clear, and well illustrated instruction book was provided and likewise a complete illustrated spare-parts list.

A-

Borgward Isabella Combi (Distributed by Fergus Imported Cars, Inc., 1717 Broadway, New York 19) \$2475 with heater, delivered N.Y.C. Imitation leather upholstery, \$35 extra. A two-door sedan of the same specifications, except for the body, is available at \$2350. There are at present 40 dealers east of the Mississippi; 10 of these are in Florida, and 8 in Chicago; there is also a distributor in Los Angeles.

A very well-built car, but judged overpriced. As with all foreign cars and some of the older American cars, if a breakdown occurs on the road that requires replacement parts, one cannot obtain them from a dealer in a town a few miles away, as one could normally with a Ford or Chevrolet, and one is likely to suffer at least some days' delay while parts are being shipped from the nearest distributor.

CR's findings on road tests

Gasoline mileage under test conditions: at a constant speed of 50 m.p.h., 30 m.p.g. Over-all miles per gallon for the 825 miles this car was driven by CR was approximately 24.5 m.p.g.

Acceleration times: from 20 to 50 m.p.h., shifting from third to fourth gear at 30 m.p.h., 19.5 sec.; from 40 to

60 m.p.h. in fourth gear, 26.3 sec. Not good by comparison with American cars.

Speedometer was about 10% fast at 60 m.p.h.

Riding quality was firm, but good on smooth roads. Some drivers do not like the pitching motion that goes with the short wheelbase of foreign cars, and in this case there was a complicating factor due to the fact that the backrest of the front seat appeared to catch at least one driver's back at the wrong point; others did not raise this objection. In view of these two factors, it is suggested that anyone planning to buy this car should plan to drive it for 30 to 40 miles on roads that are not too good, since the element of muscular fatigue may not become apparent until the car has been used for an hour or so. Headroom and leg room

were satisfactory, and vision toward front and rear was good.

Observations and conclusions

The car gave distinctly the impression of being well made and well coordinated, with fine finish, neat arrangement, good workmanship, and close attention to details in the parts that were in evidence; the design was outstandingly well carried out in its details, indicative of good manufacturing practice and careful inspection. The Borgward's performance was as quiet and free from body and other noises as the best American cars, except that there was some throbbing in the ear at certain speeds, possibly a reaction of car-body resonances to slight vibrations picked up from the engine compartment.

Off the editor's chest

(Continued from page 2)

retail price paid by the consumer, it is not commonly shown as a separate item. It is quite possible, therefore, in localities where there is a state or city sales tax that the purchaser will pay a tax on a tax unless he notes carefully the computation of the local imposition and objects if he is charged twice.

Thrifty-minded consumers should make it a point to examine their state and local sales tax regulations in the light of a decision recently won by the Automobile Club of New York in behalf of one of its members this past May. The case involved the application for refund of the portion of the New York City sales tax that was imposed on the amount of federal excise tax included in the purchase price of a 1952 Pontiac 4-door sedan (\$2805.78 plus the New York City sales tax of \$84.17). In a subsequent check of the various items involved, it was determined that \$161 of the purchase price was federal excise tax, and the purchaser applied for a refund of \$4.83 overpayment on the amount he had paid New York City. After a delay of four years, the New York City tax bureau finally handed down a favorable ruling. For the purchaser of an automobile in New York City, the precedent established will mean a saving of \$5 to \$12. It was estimated that New York City had taken in about \$700,000 a year in sales tax revenues on cars because of the city's disregard of the purchasers' rights and because of consumers' ignorance of the charges that were being imposed.

The problem was complicated by the fact that it is customary for the auto manufacturer to bill the federal excise tax to dealers as "E.O.H." or

"Factory D and H" on the dealer's invoice. Testimony in the New York case, however, brought out the fact that although this "E.O.H." item was an estimated figure, the 1952 collections under this heading exceeded the federal tax paid by General Motors by only 3/10 of 1 percent. Just what the initials "E.O.H." stand for was a matter of some debate in the case, but one suggestion was "excise tax, overhead and handling costs." The need for being somewhat vague about the terminology may have arisen in the fact that, as the brief pointed out, it is a misdemeanor, under federal law, to designate as a "tax" that which is not in fact a tax.

The Automobile Club of New York is to be congratulated on rendering a great public service to buyers of new automobiles. The precedent is one that can enable consumers over the country to save considerable sums, not only on automobiles, but on many other items as well, if intelligent application of the principle is made to the long list of products on which federal excise taxes are collected from manufacturers and the costs passed on to consumers without their knowledge of the amount of tax imposed. With the tax collector now taking something like one of every three dollars earned, people are beginning to show signs of restiveness at the amount of time they spend "working for the government." They will rightly resent paying more in taxes than is legally due. The New York automobile tax case should provide many with an effective yardstick for judging the performance of their own local tax officials.

Radio receivers made in Europe

CONSUMERS NOWADAYS are used to buying and using radio receivers of small size and mediocre performance. The old familiar console radios have become all but extinct with the advent of hi-fi and television. It was in the more substantial radios of earlier years that such marks of good design as transformer power supplies, usable short-wave circuits, push-pull audio, and speakers of fair size and quality were found.

Radios are now much simplified and smaller, with resulting limited performance and utility. Today practically no radio manufacturer in the United States makes a transformer-powered table-model radio, or uses wood cabinets with the grade of finish that goes on good furniture.

During the past two or three years, there has been a flow of European-made radio receivers into the United States, mostly from Germany and Holland. These receivers, in well made and finely finished wood cabinets, offer a variety of features in one unit and are much more advanced in design than American-made mass-production table radios. Most of the good imports have AM and FM bands in addition to one or more short-wave bands. All have the desirable multiple-speaker systems (one has as many as six speakers) and high power outputs (up to 16 watts from one set). Some of the new sets use the recently developed electrostatic speaker for reproduction of the high-frequency part of the audio range. The audio sections of the good foreign-made receivers are well designed and give better audio quality than one would expect or get from any American mass-produced table-model radio. Although combination phonoradio consoles are available, the German table-model radios have been most advertised and have

attracted the most interest. Though called table models, the sets in CR's test were considerably larger than any offered as table radios by United States' manufacturers. The cabinets were in all instances about 24 inches long by 16 inches high by 10 inches deep.

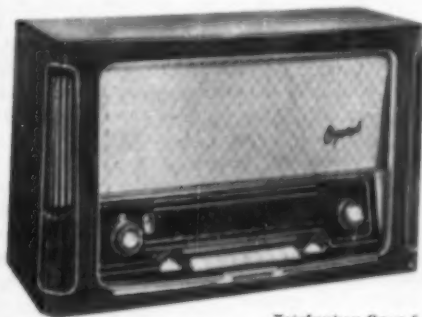
All the sets tested are advertised as high-fidelity instruments. Although the power outputs were found to be good for table-model receivers, the power output at low distortion levels was insufficient on all three sets to permit the receivers properly to be classed as high fidelity.

One important shortcoming of the foreign receivers is related to servicing, and the matter of availability of parts if needed. All of the radios tested used tubes with European designations. One, the *Siemens*, gave a list of American counterparts on its tube list fastened to the cabinet. However, one tube supply house had readily available only one of the eight tubes required, and requests for prices on the tubes with the foreign identification numbers drew a blank.

The cabinets, though large, are well filled with parts, wires, and cables; yet actual accessibility of the under-chassis parts was surprisingly good. All three of the sets had removable bottom panels, which exposed practically all of the under-chassis components for servicing. However, due to the complexity of the circuits and the use of some of them for dual functions, alignment adjustment of the sets was judged to be a difficult task for a serviceman. It will probably take a good deal of effort for the owner of one of these sets to find a serviceman outside a big city who would know how to proceed and would be willing to work on it.



Siemens Luxussuper 54-1135W



Telefunken Opus 6

All of the sets tested had finely finished wood cabinets. Built-in antennas for both AM and FM were present, and the AM broadcast antennas could be rotated (for best reception) by a knob on the front panel.

Dial calibrations on all three sets were good, but the *Siemens* had excessive "backlash" in the tuning system which made close tuning difficult on the short wave-lengths. The sets were tested for sensitivity and selectivity on all bands, audio power, and frequency response. All the sets tested gave a good account of themselves in these tests, but the *Telefunken* had lower sensitivity than the others on short waves. All the sets had provision for connecting an external speaker system. In the *Telefunken*, the internal speaker system was disconnected when an external speaker was connected; this would be advantageous for some users.

While a panel of 33 listeners judged the overall tonal quality of the three sets, and their preferences were for the *Telefunken* by a large margin, the ratings of the sets were based primarily on results of CR's technical tests.

The *Telefunken*, which was considered to give the best performance of the three sets tested, had a shock hazard (high leakage current—5 milliamperes) from exposed metal parts on the back of the set. This could be avoided by the manufacturer by electrically insulating the exposed metal from the live circuits, and once the existence of this fault is called to his attention, it may be expected that he will take prompt steps to correct it. The other sets had satisfactorily low leakage current.

All the sets tested were made in West Germany.

A. Recommended

Grundig-Majestic 3035 W/3D/USA (Majestic International Corp., 79 Washington St., Brooklyn 1, N.Y.) \$170.

Description: Cabinet of good construction and finish. Received the following bands: broadcast, 510 to 1620 kc.; short wave, 5.95 to 13 mc., 12.9 to 23 mc.; FM, 88 to 108 mc. Set had 8 push buttons, 4 to select the frequency band, 1 for tape, 1 for phonograph input, 1 to select built-in or external antenna, and a button to turn the set off. Other controls were volume, tuning (one control tuned either FM or AM by means of a clutch arrangement), bass tone control, treble tone control, speaker selector switch, and a control to rotate the built-in AM antenna. The set had 5 tubes plus 1 tuning eye tube and a selenium rectifier. The speaker system consisted of one 6 x 9 in. permanent magnet speaker, two 5 x 7 in. permanent-magnet speakers, and one electrostatic speaker.

Performance: AM (broadcast) sensitivity, good; short-

wave sensitivity, good; selectivity on AM and short wave, relatively good; FM sensitivity, good. Power output with 10% distortion was 2.5 watts (good, and should be sufficient for most users). Tonal quality from the four speakers was judged good. The tuning eye is in a position which makes its use inconvenient. Leakage current (shock hazard), satisfactorily low. **2**

Siemens Luxorsuper 54-1135W (Siemens New York, Inc., Empire State Bldg., 350 Fifth Ave., New York 1) \$249.

Description: Cabinet of good construction and finish. Received the following bands: broadcast, 550 to 1600 kc.; short wave, 12.5 to 20 meters, 20 to 50 meters; FM, 88 to 108 mc. Set had 7 push buttons, 4 to select the frequency band, 1 for phonograph input, 1 for a pre-set station, and a button to turn the set off. Other controls were volume, tuning (one control knob tuned both FM and AM, by means of a clutch arrangement), bass tone control, treble tone control, and a control to rotate the built-in AM antenna. The set had 9 tubes plus 1 tuning-eye tube and a selenium rectifier. The speaker system consisted of one 7 in. x 11 in. permanent-magnet speaker and one electrostatic speaker.

Performance: AM (broadcast) sensitivity, good; short-wave sensitivity, good; selectivity on AM and short-wave, relatively good; FM sensitivity, good. Had push-pull audio. Power output at 10% distortion, 7.2 watts (very good for a table-model receiver). Tonal quality and acoustic range from the two speakers was good. Leakage current, satisfactorily low. **3**

C. Not Recommended

Telefunken Opus 6 (Distributed by American Elite, Inc., 1775 Broadway, New York 18) \$270.

Description: Cabinet of good construction and finish. Received the following bands: broadcast, 520 to 1620 kc.; short wave, 15 to 50 meters; FM, 88 to 108 mc. This set had an additional band for long-wave reception, 145 to 320 kc. Set had 8 push buttons, 4 to select frequency band, 1 for tape, 1 for phonograph input, 1 for varying i.f. amplifier band pass (to vary AM selectivity), and a button to turn the set off. Other controls were volume, FM tuning, AM tuning, bass tone control, treble tone control, and a control to rotate the AM antenna. The set had 8 tubes plus 1 tuning-eye tube and a selenium rectifier. Speaker system consisted of two 7-in. permanent-magnet speakers, two 3½-in. permanent-magnet speakers, and two 2½-in. permanent-magnet speakers.

Performance: AM sensitivity, good; short-wave sensitivity, fair; relative selectivity (adjustable), good; FM sensitivity, good. Had push-pull audio. Power output with 6% distortion, 5 watts (very good). Tonal quality and acoustic range from the six speakers was judged good. For short-wave tuning, the FM tuning control becomes a band-spread device (a desirable feature). Leakage current, 5 ma., considered hazardous since a shock could be received through contact with exposed metal parts. (The set would otherwise have warranted an A-Recommended rating.) **3**

Fire extinguishers

AN INTERESTING PAPER by Calvin H. Yuill, Director of Fire Technology at Southwest Research Institute, appeared in a recent publication of that Institute (8500 Culebra Rd., San Antonio 6, Tex.). We quote, by permission, material from that paper—that will be of use and benefit to many readers of CONSUMERS' RESEARCH BULLETIN. We believe that Mr. Yuill has made an important contribution to the understanding of fire extinguisher types and use, a subject which is much discussed among fire protection experts at this time.

Have you ever tried to use a fire extinguisher only to find that it was designed for a different kind of fire? Or discovered that a particular extinguisher operated differently from any that you had used before? Or breathed the deadly fumes generated in using some extinguishers? Or spilled acid on your clothing while servicing another type of extinguisher? All of these mishaps, and worse, have happened to many people.

There are eight types of fire extinguishers commonly sold today. Five can be used on fires in ordinary combustibles such as wood, cloth, paper and rubbish. Five are available for use on burning oils, greases and other flammable liquids. There are three types available for fires involving electrical equipment.

Some extinguishers can be used on two different kinds of fire. None can be used successfully on all three.

Confusion confounded

Among the eight basic types of extinguishers are a multitude of operating techniques. One recent publication of a recognized laboratory illustrates four methods of actuating carbon dioxide extinguishers and five methods for operating dry-chemical extinguishers. Here indeed is confusion confounded. Is it any wonder that many fires get out of hand while the bewildered worker tries to figure out the method of operating a particular extinguisher.

Recognizing the value of present-day fire extinguishers, it is believed their utility could be measurably increased if the eight types could be reduced in number and the operating mechanism standardized.

The common **soda-acid** extinguisher is probably the oldest and most widely used. This unit, however, must be inverted so that the sulphuric acid will mix with the bicarbonate of soda solution to generate gas to expel the mixture. It must be emptied, washed and recharged each year using care to avoid spilling the acid. It is good only for fires in ordinary combustibles.

Foam extinguishers operate much as the soda-acid type but with aluminum sulphate in place of sulphuric acid and a stabilizer is added. The same objections to

method of operation and maintenance apply plus the fact that the sticky foam solution is hard to clean up after the fire is extinguished. This extinguisher is suitable for use on both combustible and flammable liquid fires. Since the solution is conductive, it should never be used on fires involving electric equipment.

Another extinguisher is the "**loaded stream**" type. Here a proprietary liquid is expelled by gas from a pressurized cylinder. There is a wide divergence of opinion on the merits of this extinguisher and it is not recognized by one of the two large laboratories engaged in testing and approving fire extinguishers. It also can be used on oil fires and fires in combustibles but not on fires in electric equipment.

Another common type is the **water pump tank**. For outdoor work—on grass, brush or trash fires—this is unexcelled because it can be refilled quickly and kept in constant operation. However, the pump tank requires more maintenance than many types and is not convenient for use on indoor fires.

The **charged water** extinguisher uses pressurized gas or a small gas cylinder inside the body of the unit and plain water. This type of extinguisher is easy to use, clean and simple to maintain. Again, it is limited to use on fires involving combustibles [such as wood, cloth, paper, and rubbish].

From a purely functional point of view, the number of extinguishers for use on fires in combustible materials could be reduced from five to one.

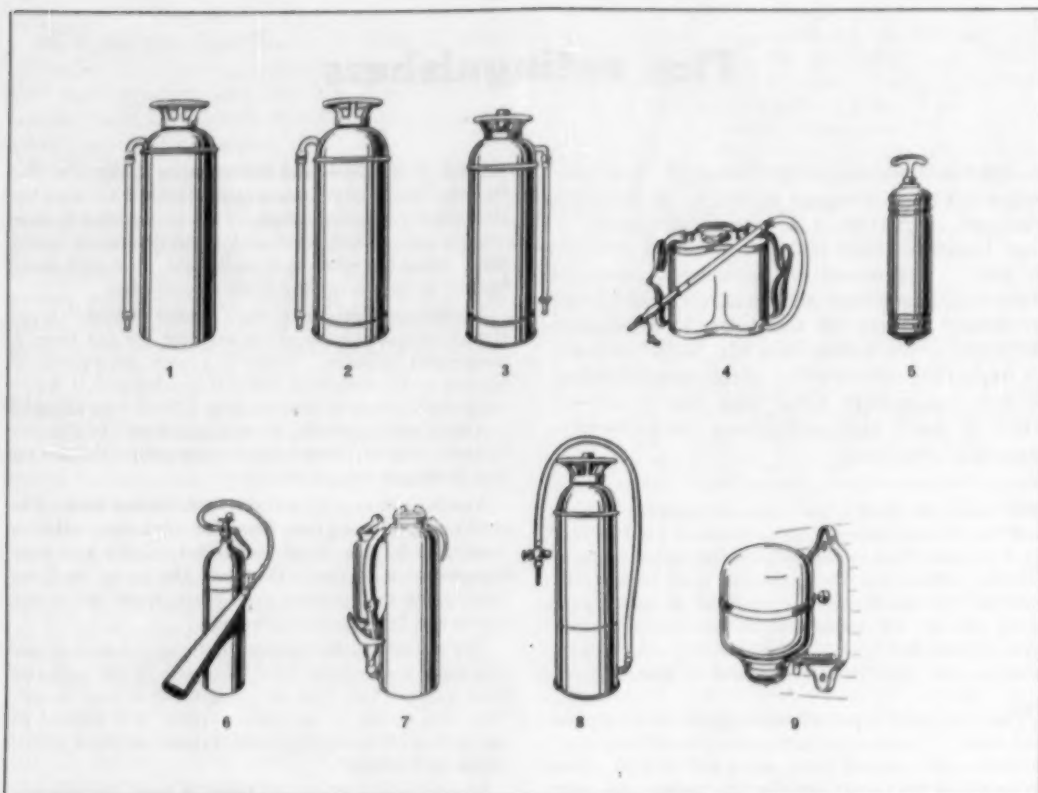
Extinguishers for fires in gasoline and oil

Now let us look at the five extinguishers sold for use on oil, grease or gasoline fires. As we have just seen, the foam and "loaded stream" types have definite drawbacks.

The **vaporizing liquid** extinguisher using either carbon tetrachloride or chlorobromomethane as the extinguishing agent can be purchased from the mail order house, the corner drug store or neighborhood hardware store. Few of the people selling or buying this type of extinguisher realize the high toxicity of fumes produced by the liquids used. Many health and medical authorities condemn this type of extinguisher. We would do well to eliminate it from the list.

This leaves the **carbon dioxide** and **dry chemical** extinguishers and a choice between these two is difficult. For many, the carbon dioxide extinguisher is attractive because it leaves no residue. On the other hand, trained fire fighters often prefer the dry chemical type for certain fires because of a lesser tendency for the fire to "flash back" and become re-ignited.

Finally there are three common types of extinguishers recommended for electrical fires. All three can be used on oil fires, and have been considered already. Leaving out the vaporizing liquid extinguisher for reasons already stated we have left two kinds, the carbon dioxide and dry chemical types.



1—soda-acid
2—foam
3—charged water,
or the similar "loaded stream"

4—pump tank (knapsack type)
5—vaporizing liquid
6—carbon dioxide

7—dry chemical
8—dry chemical
9—"grenade"

We have then eliminated five of the eight common types of fire extinguishers for use in buildings and have left only three:

1. Charged water extinguishers for fires in combustibles [like wood, cloth, paper, and rubbish].
2. Carbon dioxide and dry chemical types for oil and electrical fires.

Since the last two types are rather close in performance, it is quite possible that one of the two could be adopted as a standard. Exhaustive testing under a wide variety of conditions would be necessary to establish a preference.

Mr. Yuill's discussion of extinguishers concludes with reasons why a change from current practices would be very much to the advantage of all concerned; that the industry could serve the public better and expand markets at the same time.

* * *

When an article or appliance is not in a fully

developed state and does not have wide acceptance, there is ample justification for diversity in design and details; these are often helpful and make for progress. However, the fire extinguisher business has now reached that stage of mass production that warrants a new approach. The manufacturers should get together, perhaps under the auspices of the American Standards Association, and arrive at a dimensional and mechanical simplification and standardization of extinguishers and instructions for their use that will make it easier and safer for the consumer to buy and use their extinguishers. When a fire extinguisher is needed, the need is desperate, and the user will not have time to study, understand, or make advantageous use of the minor differences—which individual manufacturers no doubt think very important with respect to their respective brands. Far more important than these distinctions is the stand-

ardization of details that would make the extinguisher quickly and readily used by anyone in an emergency and so that one might, having exhausted an extinguisher of one make, pick up a second of another make and find it usable in the same way as the first, without need to master a second set of directions perhaps rendered illegible by paint, dust, or dirt, or hard to read in a smoke-filled or poorly lighted place. Dimensional interchangeability of many parts would make for more extinguishers being kept in working order against the day when they are desperately needed.

A final word on the fire extinguisher problem. One man with long experience in the field of fire prevention has expressed the view that if people called fire departments first and *then* used appropriate fire extinguishers, there would be less loss of life and property. Too many do not promptly call the professional fire fighters, and do not know how to use extinguishers effectively during the precious seconds or minutes when the fire might have been gotten under control. Business concerns and others may install extinguishers for "rate credit" but should *insist* that people call the fire department at once. The professional firemen know which extinguisher to use, and as a rule know *how* to use it, how to protect themselves from the dangers of noxious fumes, vapors, and gases and to use respirators and masks when required. They also know when they should use a water stream to obtain the best effect in extinguishing a blaze.

Finally, don't depend on the vaporizing liquid (carbon tetrachloride) fire extinguisher. Use of one of these in any confined space is fraught with great danger to the user. Not only is the carbon tetrachloride vapor itself extremely poisonous, and likely to be present in high concentration in the space where the extinguisher is used, but the deadly war gas phosgene is likely to be generated

wherever fire or hot surfaces are present. That gas is extremely toxic (limited, indeed, to *1 part per million* of air in industrial operations), and it has the peculiar danger of delayed effect with no immediate symptoms, so that collapse and death may occur some hours or days after the exposure, without warning. "Carbon tet" has been the cause of many deaths, under conditions no more severe than would easily occur in the use of a vaporizing-liquid fire extinguisher. Even so there are people who go about explaining that pure carbon tetrachloride involves no real hazard and that it is the conditions of the fire that produce the hazard in use of "carbon tet." They argue, incorrectly, that the hazards due to the extinguisher are not important, since the fumes from the fire are even more dangerous.

A particularly objectionable kind of carbon tetrachloride extinguisher is the "*grenade*," bottle, or globe, made by many manufacturers, which is to be thrown at the fire or dropped on it, perhaps by an automatic heat-actuated trigger or release device of some sort. These, often sold by a high-pressure salesman with a very convincing sales talk, *are not effective*. They are very dangerous and, indeed, several deaths have resulted from exposure to the deadly phosgene gas released by this type of extinguisher in the presence of heat. All grenade-type extinguishers are *C. Not Recommended*.

Consumers should not buy any sort of extra-small fire extinguisher. No one has successfully combined adequate effectiveness with compactness and small size.

Likewise to be avoided are all extinguishers, regardless of size, type, mechanism, or material used, that do not have the listing or approval of the Underwriters' Laboratories, Inc., of Chicago, or The Inspection Department of the Associated Factory Mutual Fire Insurance Companies, Boston.

Gutter tubes

MANY HOMEOWNERS are plagued every autumn with clogging of gutters and leaders or downspouts by falling leaves. An accumulation of leaves, twigs, etc., in a gutter may cause rain water to spill over and run down the side of the house, leaving unsightly streaks

and stains. Water that leaks into the walls from an overflowing gutter or clogged downspout is likely to rot the wood or ruin the paint.

Frequent cleaning of gutters and protection of downspout holes with wire strainers (or the *New Way Eave Trough Shields*, see CR BULLETIN



This illustration, taken from the manufacturer's literature, shows how the Rain-L-Flo is supposed to keep the leaves from filling up and clogging the gutter.

of October 1953) will help to protect the house from damage.

The *Rain-L-Flo* and *Free-Flo Gutter Tubes* are devices intended to eliminate the need for cleaning gutters, by keeping leaves, etc., out of the gutters. The *Rain-L-Flo Gutter Tube* is merely a tube of "bronze" insect screen wire about 3 inches in diameter supported internally by a coil of brass. The *Free-Flo Gutter Tube* is a similar tube made of galvanized screen wire; this is somewhat stiffer, and has no internal supporting coil. The *Rain-L-Flo* comes in 5-foot lengths, at 49 cents per foot, and the *Free-Flo* in 2½-foot lengths, at 39 cents per foot. Lengths of the tube are to be fitted together end to end, like stovepipe, and laid along the entire length of the gutter.

The rain water is supposed to go through the screen and flow in the tube while the leaves lie on top of the tube until they dry up and blow away. Unfortunately, it doesn't happen that way in practice, for leaves get in between the gutter tube and the gutter where they remain, holding moisture which accelerates corrosion of both the gutter (if of metal) and the gutter tube.

CR put samples of both *Rain-L-Flo* and *Free-Flo* in a gutter to compare with a near-by "unprotected" gutter. Leaves and other debris in the unprotected gutter flowed to the low end where they piled up and prevented the water from flowing freely. In the gutter with gutter tubing, the leaves, etc., became caught between the tube and the gutter all along its length. While this interfered somewhat with water flow, there was still a reasonably good flow through the gutter. The *Rain-L-Flo* or *Free-Flo* may

thus reduce the number of times a gutter must be cleaned during a season, but they make cleaning of the gutter more difficult when it does become necessary.

Whether or not such a device is worth buying depends largely on the particular problem which you have. The extent and frequency of clogging depend on the kind of leaves, stems, blossoms, and the like that may fall from near-by trees, and partly on the length of dry periods that come between periods of rainfall. It is therefore impossible to say categorically that the device will help in any given situation. It might be worth trying a length of *Rain-L-Flo* or *Free-Flo*, if your gutter is not too long, to see how it works out under your particular conditions (especially if the gutter is high and hard to reach for frequent cleaning).

The bronze *Rain-L-Flo* should never be placed in an aluminum or galvanized-steel gutter, as chemical action between the dissimilar metals will then greatly accelerate corrosion of the gutter. The galvanized-wire *Free-Flo* should not be put in copper gutters, because the same sort of action will quickly corrode the *Free-Flo* wires.

It is doubtful that many homeowners will find this sort of gutter protection worth while, as the galvanized *Free-Flo* costs two to three times as much per foot as 5-inch galvanized gutters, and observations of the sample CR tested indicates that it should not be expected to last through many seasons. The *Rain-L-Flo Gutter Tube* costs almost twice as much per foot as aluminum gutters and nearly as much as wood or copper gutters. On small orders, the shipping charges would increase the cost per foot of the gutter tube considerably, but orders of 60 feet or more are shipped prepaid.

A much more economical means of keeping gutters clear might be to cut strips of stiff screen wire cloth a little wider than the gutter, fold over the edges, and lay them in the top edge of the gutter with the wire curved slightly to help hold it in. The material cost in this case would come to about 1/6 to 1/10 as much as if *Rain-L-Flo* or *Free-Flo* were used for the purpose. Galvanized hardware cloth up to ½-inch mesh would be even better because the larger mesh would not clog so easily as screen wire, but it cannot be used on copper gutters because of chemical (corrosive) action between the metals. The material would have to be fastened in place over the gutters, by galvanized wire or galvanized bands, or if the gutter is of wood, galvanized netting staples.

Rain-L-Flo and *Free-Flo* are widely advertised and are sold by Wynnco Products Corp., 344 Luckie St., N.W., Atlanta, Georgia.

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines—some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are: *Boxoffice*, *Cue*, *Daily News* (N. Y.), *The Exhibitor*, *Films in Review*, *Harrison's Reports*, *Joint Estimates of Current Motion Pictures*, *Motion Picture Herald*, *National Legion of Decency*, *Newsweek*, *New York Herald Tribune*, *New York Times*, *The New Yorker*, *Parents' Magazine*, *Release of the D. A. R. Preview Committee*, *Reviews and Ratings by the Protestant Motion Picture Council*, *The Tablet*, *Time*, *Variety* (weekly).

The figures preceding the title of the picture indicate the number of critics whose judgments of its entertainment values warrant a rating of A (recommended), B (intermediate), or C (not recommended).

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
c—in color (Anasco, Eastman, Technicolor, Trucolor, Warner Color, etc.)
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
nov—dramatization of a novel
rom—romance
sci—science fiction
soc—social problem drama
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C	
—	—	—	Abdullah's Harem (see Royal Bed, The)
—	5	8	Adorable Creatures (French) com A
4	7	7	Alexander the Great hist-dr-c AYC
—	4	3	Angel Who Pawned Her Harp, The (British) fan A
—	6	7	Animal World, The doc-c AYC
2	11	5	Anything Goes mus-com-c AY
1	10	2	At Gun Point wes-c AYC
1	3	5	Autumn Leaves dr A
—	—	3	Awara (Indian) nov A
1	3	1	Away All Boats war-dr-c AYC
—	6	4	Backlash wes-c A
1	6	2	Ballet of Romeo and Juliet, The (U.S.S.R.) doc-c AYC
1	2	—	Battle of Gettysburg, The doc-c AYC
—	3	6	Battle Stations war-dr AY
—	—	3	Beast with 1,000,000 Eyes, The sci A
—	2	1	Behind the High Wall soc-mel A
5	9	3	Benny Goodman Story mus-biog-c AYC
—	—	6	Betrayed Women soc-mel A
6	10	1	Bhowani Junction mel-c A
—	9	9	Birds and the Bees, The com-c A
—	4	2	Black Sheep, The cri-mel A
—	5	6	Blackjack Ketchum, Desperado wes AYC
—	1	2	Bobby Ware Is Missing mys-mel AYC
—	11	5	Bold and the Brave, The war-com A
1	6	9	Bottom of the Bottle, The mel-c A
—	2	6	Brain Machine, The (British) cri-mel A
—	2	6	Broken Star, The wes A
8	8	1	Carousel mus-dr-c A
—	3	6	Cash on Delivery (British) com A

A	B	C	
1	9	6	Catered Affair, The dr A
2	13	—	Cockleshell Heroes (British) war-dr-c AY
—	7	3	Comanche hist-dr-c AY
—	10	2	Come Next Spring dr-c AY
—	1	7	Come On, The cri-mel A
—	2	3	Congo Crossing mel-c A
1	5	11	Conqueror, The adv-c A
3	14	1	Court Jester, The com-c AYC
6	9	1	Court Martial of Billy Mitchell, The biog-c AYC
—	3	9	Creature Walks Among Us, The sci A
—	2	1	Creeping Unknown, The sci A
—	1	4	Crime Against Joe cri-mel A
2	3	9	Crime in the Streets soc-mel A
—	—	3	Cross Channel (British) mel AY
—	5	2	Crowded Paradise soc-dr A
—	2	4	Dance Little Lady (British) dr-c A
—	1	4	Dark River (Argentine) dr A
—	4	6	Day of Fury, A wes-c A
—	1	4	Day the World Ended sci A
1	6	6	D-Day, the Sixth of June war-dr-c A
—	8	9	Diane hist-dr-c A
—	12	5	Doctor at Sea (British) com-c A
2	6	3	Don Juan (Austrian) mus-dr-c A
—	5	1	Earth vs. the Flying Saucers sci AYC
1	6	2	Eddy Duchin Story, The mus-biog-c AYC
—	2	5	Emergency Hospital mel A
3	3	—	First Texas, The biog-c AYC
—	1	11	Flame of the Islands mel-c A
—	15	2	Forbidden Planet sci-c A
1	3	2	Foreign Intrigue mys-mel A
—	7	10	Forever, Darling com-c AYC
—	5	3	French Can Can (French) mus-com-c AYC
—	4	5	Fury at Gunsight Pass wes AYC
—	9	6	Gaby war-dr-c A
—	3	5	Ghost Town wes AYC
—	6	2	Glory dr-c AYC
—	5	6	Godzilla (Japanese) sci A
1	6	3	Golden Demon (Japanese) dr-c A
3	7	1	Goodbye, My Lady dr AYC
1	4	10	Great Day in the Morning mel-c A
1	6	1	Great Locomotive Chase hist-dr-c AYC
3	11	5	Harder They Fall, The mel A
—	6	3	Heide and Peter dr-c AYC
3	7	7	Helen of Troy hist-dr-c A
—	5	8	Hell on Frisco Bay cri-mel-c A
—	5	4	Hell's Horizon war-mel A
—	3	1	Hidden Guns wes-mel-c AYC
—	3	12	Hilda Crane dr-c A
—	2	3	His Excellency (British) dr A
—	6	5	Hot Blood mus-dr-c A
2	5	1	House of Ricordi (Italian) mus-biog-c A
—	4	6	Houston Story, The cri-mel A
4	8	5	I'll Cry Tomorrow mus-biog A
—	1	3	Indestructible Man, The cri-mel A
—	9	6	Indian Fighter, The mel-c A
—	3	8	Inside Detroit mel A
—	4	2	Invasion of the Body Snatchers sci A
2	4	7	Invitation to the Dance mus-doc-c A
—	3	—	Jaguar mel AYC
—	4	7	Joe Macbeth cri-mel A
3	9	5	Jubal wes-c A
—	4	4	Kettles in the Ozarks, The com AYC
—	5	4	Kid for Two Farthings, A (British) dr-c A
—	5	5	Killer Is Loose, The cri-mel A
—	7	2	Killing, The cri-mel A
8	2	—	King and I, The mus-dr-c AYC
1	10	5	Kismet mus-com-c A
—	3	4	Kiss Before Dying, A cri-mel-c A

The Consumers' Observation Post

(Continued from page 4)

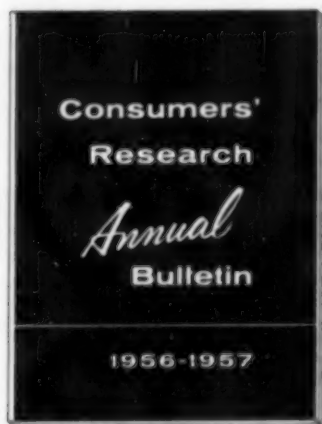
HAS YOUR GARDEN SUFFERED from a wide variety of marauding insects this summer? There are all kinds of poisons, sprays, and dusts to be applied with varying degrees of success (and hazard to health), but one sensible solution to the problem has been evolved by Entomologist Neely Turner of the Connecticut Agricultural Experiment Station. He has given careful study to the insect pests in his locality and specialized on flowers and plants that attract the fewest bugs. He reports that his garden was long on petunias and short on roses and dahlias. Now he has added flowers attacked by pests that are routed easily with general-purpose insecticides such as DDT or malathion, which are not too dangerously toxic to man and animals if carefully handled.

* * *

STAINLESS STEEL is easy to clean and keep clean, but it does need proper care. Richard E. Paret of the American Iron and Steel Institute in Restaurant Equipment Dealer suggests that stainless-steel surfaces be cleaned with ordinary soap and water, applied with a cloth or sponge. He warns against using common steel wool, scouring pads, scrapers, wire brushes, or non-stainless-steel devices which may cause streaks of rust due to contamination by particles of carbon steel that have rubbed off these steel cleaners and have become embedded in the surface.

* * *

WARNINGS OF DANGERS involved in exposure to radiation continue to be a matter of concern in scientific circles. The subject is one of great interest in view of the plans for future use of atomic energy in civilian life, such as nuclear power plants. At a scientific meeting held late last year, Professor G. Hoyt Whipple of the University of Rochester recommended a drastic reduction of the present maximum limit of radiation per week to which workmen and others may be exposed, pointing out that while it is not possible to predict the exact magnitude of genetic risk involved, the problem of genetic effects on future generations is a matter of grave concern; indeed, is a matter vital to the conservation of the race. He urged that the present maximum of 3/10 of a roentgen, approved by the National Committee on Radiation Protection, be reduced to 3/100 of a roentgen per week; this he calculated will give a life expectancy reduction from a lifetime of work in nuclear projects of about four months (instead of a possible 3 years).



This guide to quality for thrifty shoppers provides a compact summary of CR's ratings and practical advice to help you choose among many competing brands.

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THE WIDESPREAD POPULARITY OF SOAPS containing hexachlorophene has brought imitators. The demonstrated effectiveness of such soaps in decreasing perspiration odor by routine use has proved to be such an appealing sales argument that many an advertising manager must have pestered his production experts to come up with something similar. One of these competing products is Lifebuoy, which contains tetramethylthiuram disulphide. The claims that it reduced bacterial activity on the skin and helped control perspiration odor have been examined by Irvin H. Blank, Ph.D., of Boston. Reporting the results of his study in the Journal of the American Medical Association, Dr. Blank indicated that the bacteria-controlling properties of this soap were comparable to those of the hexachlorophene soaps. He noted, however, that the chemical was one used by the rubber industry as an accelerator in processing of rubber, and several of his patients had been allergically hypersensitive to it. He found a few of his patients hypersensitive to the soap, but concluded after a study of the records available that two years' experience in marketing the soap had not indicated a great number of cases of irritation due to use of the new product.

* * *

CIGARS can now be homogenized too. The technique involves pulverizing tobacco and pressing it like paper into a thin layer for a binder or inner wrapper. According to The Wall Street Journal, this technique enables cigar makers to get as many homogenized binders out of one acre as they would with the natural leaf from three acres.

* * *

ACCURACY OF THE POLICE DOPPLER RADAR SET to check speeds of automobiles has been challenged by Philip J. Carosell of the Denver Bar and William C. Coombs of the Denver Research Institute of the University of Denver. Objection is made to the complete acceptance of radar infallibility in view of the basic limitations and potential errors of the c-w (continuous wave) radar instrument, which are set forth with documentation. The authors point out that much depends on the design integrity of the instrument used, how carefully it is calibrated, and how effectively its data are observed and interpreted. Various court decisions involving the use of radar as evidence are discussed and evaluated. The authors suggest that such devices need to be certified as accurate by an authority designated by the legislature of each state in accordance with expertly determined standards of performance and operation for such instruments. Those who have a particular interest in the problem may well wish to read the study entitled "Radar Evidence in the Courts," in Dicta, September-October 1955, available at 75 cents, from Dicta, 525 Mile High Center, Denver 2, Colorado.

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CR-5-56

Phonograph Records

BY WALTER F. GRUENINGER

Please Note: The first symbol applies to quality of interpretation, the second to fidelity of recording.

Bach: *Violin Concerto No. 1*, Stern (soloist), and *Violin Concerto No. 2*, Oistrakh (soloist) & **Vivaldi:** *Concerto in A Minor for Two Violins*. Oistrakh and Stern. All with the Philadelphia Orchestra under Ormandy. Columbia ML 5087. \$3.98. An uncommon record. The Vivaldi reveals a tendency, in the end movements, for the soloists to oppose each other, but in other respects the fiddling is good and the orchestra does all the composers demand. Stern's work in the Bach is outstanding. Some disturbing pre-echoes in the recording. AA A

Beethoven: *Leonore Overtures 1, 2, 3 and Fidelio Overture*. Philharmonia Orchestra under Klemperer. Angel 35258. \$4.98. Straightforward, impressive, energetic playing of the pieces written for *Fidelio*. Robust, richly blended recording. Equals the excellent Scherchen-Westminster 5177. AA AA

Mozart: *Concerti Nos. 1 and 7*. Grumiaux (violin) with the Vienna Symphony Orchestra under Paumgartner. Epic LC 3230. \$3.98. Though neither work is often heard, the Mozart charm is ever present. Grumiaux is solid, expressive, elegant, and he is well supported and recorded. Perfection would call for better intonation and fewer slides on the part of Grumiaux. A AA

Mozart: *24 Songs*. Felbermayer (soprano). Vanguard VRS 481. \$4.98. A welcome disk, though Mozart was no expert in the *lied*. Miss Felbermayer sings on pitch and clearly, but with less color than ideal. A AA

Mozart: *Sonatas for Organ and Orchestra*. Ellsasser (organ) with the Hamburg Chamber Orchestra under Winograd. MGM E 3363/4. \$3.98 each. Seventeen cheerful, one-movement pieces, not recorded heretofore. Not great Mozart, but interesting miniatures. Winograd should coax more grace from the orchestra. A AA

Mozart: *Symphonies Nos. 26, 32, 41*. Concertgebouw Orchestra under Böhm. Epic LC 3229. \$3.98. A welcome group, presenting two early works in the Italian style and one masterpiece, "Jupiter." Some conduct with more nuance, but this playing is firm and appropriate. Well recorded. A AA

Prokofiev: *The Ballet of Romeo and Juliet*. Orchestra of the Bolshoi Theatre under Rozhdestvensky. 4 sides, Westminster XWN 2206. \$7.96. For the first time the complete ballet music is available on disks. Suites chosen from the score have been available for some time. It is doubtful, however, that most listeners will find the complete score more rewarding than the suites. Expertly played, but the recording, made for the sound track of the film, falls short of our best. AA B

Ravel: *Sonata, Tsigane, Kaddish, Habanera, Berceuse*. Francescatti (violin), Balsam (piano). Columbia ML 5058. \$3.98. Masterful, dexterous playing of short numbers. Well recorded. AA AA

Saint-Saëns: *Concerto in A Minor & Miaskofsky: Concerto in C*. Rostropovich (cello) with the Philharmonia Orchestra under Sargent. RCA Victor LM 2016. \$3.98. Satisfactory, hard working performance by the cellist, but not great. Good orchestral support. The Saint-Saëns concerto is a standard piece; the introspective Miaskofsky offers little that attracts the virtuoso. A A

Shostakovich: *Symphony No. 5*. Leningrad Philharmonic under Mravinsky. Vanguard VRS 6025. \$4.98. Most frequently recorded Shostakovich symphony. Mravinsky, a close friend of the composer, conducted the first performance so his unusual tempi must be regarded with respect. The last movement is particularly fast. Yet, Mitropoulos on Columbia ML 4739 conducts the N.Y. Philharmonic with strong rhythm and grace, and

moves me more than Mravinsky. Columbia is better recorded, retaining the No. 1 spot. A B

Strauss: *Le Beau Danube*. Orchestra of the Paris Opera under Rosenthal. Capitol P 18006. \$3.98. Ballet music based on Johann Strauss tunes, arranged by Desormière. It's gay, youthful, delightful, introducing parts of Strauss waltzes, polkas, etc. Playing a bit heavy-footed. A A

Tigranian: *Anush*. Soloists, Chorus, and Orchestra of the Armenian State Theatre of Opera and Ballet under Tavrizian. 6 sides, Westminster OPW 1302. \$14.85. Distinctive set. First performance of this opera composed by the Armenian, Tigranian, was given in 1912. The work, which stems from the folk-music of the region, is melodic and most agreeable listening. Parts remind one of Ippolitov-Ivanov's Caucasian Sketches. The singers know the style and possess well trained voices, though not up to the best in the Met. Goar Gasparian, soprano in the name role, is outstanding. Good recording, though the solo voices are too loud in relation to the orchestra. A A

The English Madrigal School. Vols. 1 and 2. The Deller Consort (singers). Vanguard BG 553/4. \$4.98 each. Wilbye, Johnson, Weelkes, Edwards, etc., sung handsomely by a group of six which includes the celebrated counter-tenor Alfred Deller. AA AA

Your Musical Holiday in Barcelona. Coblá Barcelona, Eshart Verdager, St. Jordi Choir. Decca DL 8224. \$3.98. Music heard at a Catalan Fiesta performed by a band, folk dance group, choir. Colorful, authentic, unique. Some of the notes emitted by the band are "questionable"! But it's all very gay, folksy. Satisfactorily recorded. Most distinctive of six new releases in Decca's "Your Musical Holiday" series. A A

Your Musical Holiday in Mexico. Pepe Gonzalez and His Orchestra. Decca DL 8266. \$3.98. "Marcheta," "Adelita," "La Cucaracha," "La Paloma," and other favorite numbers most frequently associated with Mexico. Richly orchestrated in the Kostelanetz fashion, which makes this disk less flavorsome than *Holiday in Barcelona*. Very well played and recorded. AA AA

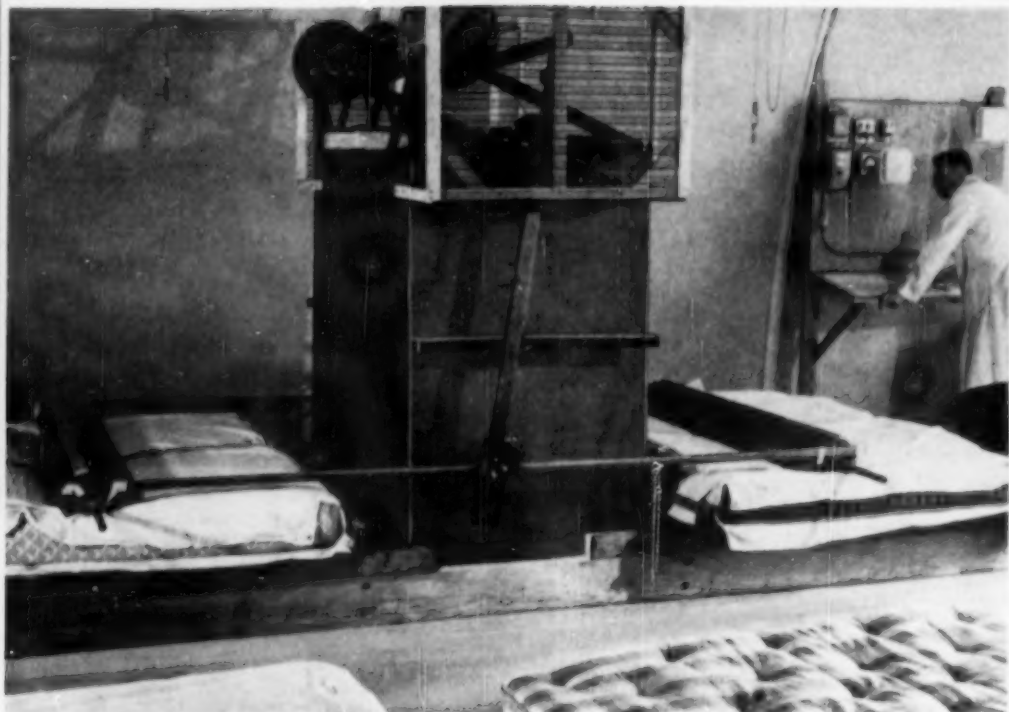
Jump Up Carnival. Various Instrumentalists and Singers. Cook 1072. \$4.98. More colorful than a kaleidoscope. Trinidad's Mardi Gras is not held for tourists but the indefatigable Emory Cook's mike recorded the goings on of steel bands, prize winner Mighty Sparrow singing on the Savanna, what happened inside a calypso tent, Saturday night blowout at Little Carib Theatre, etc. Most informal and realistic. AA A

Modern Violin Encores. D'Andurain. Capitol P 18010. \$3.98. Agreeable pieces, few of which have been recorded previously. Polished, tasteful playing by a youthful Chilean, but a little short on brilliance. Recorded rather distantly. A A

The Wayfarers (singers). RCA Victor LPM 1213. \$3.98. Well rehearsed, smooth singing trio of two ladies and one gent who offer 17 folksongs and popular songs of many lands. Included are "Waltzing Matilda," "Old Paint," "Hush Little Baby," "Hammisi," etc. Guitar accompaniment. A AA

Les Compagnons de la Chanson (singers). Angel ABL 6400. \$3.48. Nine men sing eight light songs, principally French, that have made them popular in big night spots and concert halls. AA A

Amalia Rodrigues (singer). Angel ANG 64002. \$2.98. Portugal's foremost entertainer sings *Fado* from Portugal and *Flamenco* from Spain. Her dark, hoarse, expressive voice fits the material. She is accompanied by two guitar-like instruments and is superbly recorded. AA AA



The mattress-testing machine used by Consumers' Research.

Photo by Werner Wolff of Black Star

How we know about mattresses

When you are buying an innerspring mattress, you can't, of course, tell by looking at it whether or not it will have good durability and stand up for years under daily use. Nor is the price an adequate guide. In tests made by Consumers' Research, a mattress priced at sixty dollars was rated *C. Not Recommended*, while another selling at about the same price was rated *A. Recommended*.

Durability tests are carried out at CR on a mattress-testing machine that subjects each mattress to the action of a 285-pound roller that moves across each mattress many thousands of times, causing the springs to compress and expand repeatedly. The mattresses are examined periodically for defects and signs of failure, and the tests continued until each mattress fails in some manner (usually by breakage of a number of coil springs or wires) or until it has received 140,000 single passes of the roller. This accelerated wear test does not, of course, reflect the conditions of actual service in any

particular home, but it does provide a useful indication of the probable relative wear life of the mattresses tested.

The testing machine illustrated is one of CR's own design and manufacture. It is so impressive in its performance that details of its design and construction have been requested by a European bedding trade association so that they might build one and use it to improve the quality of the products turned out in their own factories. Consumers' Research is glad to make its contribution toward extending knowledge of methods of testing articles used by consumers.

The machine illustrated is just one of many testing devices designed by Consumers' Research to provide the readers of Consumers' Research Bulletin with dependable scientific and engineering data so that they may know the quality and value of what they buy.